Common Disorders Affecting the General Population: Standard Treatment Guidelines for General Surgeons

Summary:

The following guidelines cover a wide array of topics related to gastroenterology, oncology, endocrinology and infectiology. It provides guidance for many disorders that are common in the Egyptian population. These guidelines provide recommendations based on review of clinical literature and professional practice at the time of their synthesis. They are not intended to be used as comprehensive practice guidelines.

For each disease, the guidelines discuss relevant sections that cover the most important aspects pertaining to the disease of interest. Hence, variability in presentation of these guidelines is evident.

It is important to note that these guidelines do not intend to dilute the specific requirements of each individual patient, but rather serve as a bite-sized information source to help practicing professionals gain the latest insights from both perspectives of latest clinical practice guidelines and published evidence from scientific research. Therefore, individual patient circumstances must guide the practicing professionals to provide optimum care for their patients. The use of these guidelines as a source of information does not preclude from referring to a more detailed clinical practice guidelines for a specific disease area or a complex clinical case.

In most cases the guidelines are presented in a form that involves brief overview of the disease and recommendations regarding diagnosis and management of various medical conditions related to the aforementioned fields and are of interest to the practitioners in Egypt and elsewhere.

The guidelines are divided in the form of chapters, where each chapter provides information regarding one of the ailments associated with the therapeutic areas that have been mentioned earlier.

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General Information about the Guidelines:

Scope:

- Diseases of interest

Gastrointestinal, oncological, endocrinological disorders, and infectious diseases.

- Category

Disease background, diagnosis and management.

- Clinical Specialty

Gastroenterology, oncology, endocrinology, and infectiology.

- Intended Users

Practicing physicians and specialists.

- Guideline Objective(s)

Provide practicing physician and specialists with a summarized source of information for specific ailments mentioned in the 'Diseases of interest' section.

Methodology:

The guidelines provided in this document are based on recommendations from experts in the field of gastroenterology, oncology, and endocrinology serving various specialties and subspecialties. These guidelines harmonize the latest updates from high-quality published scientific literature with the best available practice for the disease area in question.

Rating of Recommendations:

Where applicable, recommendations were rated in the view of benefit/risk ratio. Which means that the higher the rating of the recommendation, the more patients it can be applied to with the benefits exceeding risks.

Strength of Recommendation	Definition
Strong Recommendation (1A denoting to high-quality evidence, 1B denoting to moderate-quality evidence, and 1C denoting to low- or very-low-quality evidence).	Benefits clearly outweigh risk and burdens or vice versa.
Weak Recommendation (2A denoting to high-quality evidence and 2B denoting to moderate-quality evidence).	Benefits closely balanced with risks and burdens
Weak recommendation (2C denoting to low- or very-low-quality evidence).	Uncertainty in the estimates of benefits, risks, and burden; benefits, risks, and burden may be closely balanced.

(i) Chapter 1: Guidelines for the Assessment and Management of Groin Hernia

Overview

Hernia is a condition that is characterized by the protrusion of parietal peritoneum through a hiatus. Hernia can be classified into internal or external depending on extent of protrusion.[1]

Diagnosis Recommendations and Considerations[2]

- Benefits do or do not outweigh risks and burden.
- Clinical Examination and Ultra Sound combined is recommended as most suitable for diagnosing patients with vague groin swelling or possible occult groin hernias.
- Dynamic MRI or CT can be considered for further evaluation if Ultra Sound is negative or non-diagnostic.

Differential Diagnosis

Differential diagnosis involves diseases, such as malignant conditions, abscess, hematoma, hydrocele, femoral hernia, undescended testicle, and other related conditions.[3]

Treatment Recommendations and Considerations

Surgery[2]

- Discussions with patients about timing of hernia repair are recommended to involve attention to social environment, occupation and overall health.
- The lower morbidity of elective surgery has to be weighed against the higher morbidity of emergency surgery.
- The Shouldice technique is recommended in non-mesh inguinal hernia repair.
- A mesh-based repair technique is recommended for patients with inguinal hernias.
- Despite comparable results, three dimensional implants (plugand-patch and bilayer) are not recommended because of the excessive use of foreign

material, the need to enter both the anterior and posterior planes and the additional cost.

- The use of other implants to replace the standard flat mesh in the Lichtenstein technique is currently not recommended.
- In laparo-endoscopic inguinal hernia repair, as TAPP and TEP have comparable outcomes it is recommended that the choice of the technique should be based on the surgeon's skills, education and experience.
- Laparo-endoscopic repair is recommended for the repair of primary bilateral inguinal hernias provided that a surgeon with specific expertise and sufficient resources is available.
- Laparo-endoscopic repair is recommended for the repair of primary bilateral inguinal hernias provided that a surgeon with specific and sufficient resources is available.
- In patients with pelvic pathology or scarring due to radiation or pelvic surgery, or for those on peritoneal dialysis, consider an anterior approach.
- It is recommended that surgeons tailor treatments based on expertise, local/ national resources, and patient- and hernia related factors.
- Since a generally accepted technique, suitable for all inguinal hernias, does not exist, it is recommended that surgeons/surgical services provide both an anterior and a posterior approach option.
- It is recommended that the contralateral groin be inspected at the time of TAPP repair.
- If a contralateral inguinal hernia is found at the time of surgery and prior informed consent was obtained, repair is recommended.
- Day surgery is recommended for the majority of groin hernia repair provided aftercare is organized and suggested for selected other cases.
- Mesh fixation is recommended in patients with large direct hernias (M3-EHS classification) undergoing TAPP or TEP to reduce recurrence risk.
- In open mesh repair, administration of antibiotic prophylaxis in average-risk patients in a low-risk environment is not recommended.
- Administration of antibiotic prophylaxis in open mesh repair in any patient in a high-risk environment is recommended.
- In laparo-endoscopic repair in any patient in any risk environment, antibiotic prophylaxis is not recommended.

- Local anesthesia is recommended for open repair of reducible inguinal hernias, provided surgeons/teams are experienced in local anesthesia use and administering the local anesthetic.
- Patients are recommended to resume normal activities without restrictions as soon as they feel comfortable.
- Pre- or perioperative local anesthetic measures like field blocks of the inguinal nerves and/or subfascial/subcutaneous infiltration are recommended in all open groin hernia repairs.
- Patients are recommended to resume normal activities without restrictions within three to five days or as soon as they feel comfortable.
- Provided that expertise is available, women with groin hernias are recommended to undergo laparo-endoscopic repair with mesh implantation.
- Timely hernia repair is recommended in women with groin hernias.
- Physicians should consider femoral hernia in the differential diagnosis of groin swelling in women.
- Mesh is recommended to be used in elective femoral hernia repairs.
- Providing expertise is available, a laparo-endoscopic procedure is recommended for elective femoral hernia repair.
- Chronic pain should be defined as ≥ bothersome moderate pain impacting daily activities lasting ≥ three months postoperatively.
- Nerve anatomy awareness and recognition during surgery is recommended to reduce the incidence of chronic post-herniorrhaphy pain.
- Laparo-endoscopic recurrent inguinal hernia repair is recommended after failed anterior tissue or Lichtenstein repair.
- Anterior repair is recommended after a failed posterior repair.
- An expert hernia surgeon should repair a recurrent inguinal after a failed anterior and posterior repair.
- The choice of technique depends on patient and surgeon-specific factors.
- A goal-directed curriculum including review of anatomy, procedure steps, intraoperative decision making and proficiency based, simulation enhanced technical skills training is recommended.
- From a cost-effectiveness perspective, day-case laparoendoscopic inguinal hernia repair with minimal use of disposables is recommended.
- HerniaSurge recommends that all countries or regions develop a guidelines dissemination and implementation strategy.

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(i) Chapter 2: Guidelines for the Prophylaxis and Management of Infections

Overview

Antimicrobial prophylaxis refers to the use of antimicrobial agents, such as antibiotics, to prevent infectious diseases. Antimicrobial prophylaxis is used in operative setting to prevent infection of the surgical site.[1] It is given once (single dose) and may be repeated during surgery if the patient lost 1500 ml of blood or the two half-life of antibiotics exceeded.

1- Surgical Prophylaxis

Antimicrobial prophylaxis is organized based on surgical wound classification, which includes:[2]

Clean (Class I)	Nontraumatic
	No inflammation encountered
	No break in technique
	Respiratory, alimentary, or genitourinary tract not entered
Clean-contaminated (Class II)	Gastrointestinal or respiratory tract entered without significant spillage (stomach and jejunum)
	Appendectomy
	Oropharynx entered
	Vagina entered
	Genitourinary tract entered in absence of infected urine
	Biliary tract entered in absence of infected bile
	Minor break in technique
Contaminated (Class III)	Major break in technique
	Gross spillage from gastrointestinal tract
	Traumatic wound, fresh
	Entrance of genitourinary or biliary tracts in presence of infected urine or bile

Antibiotic Recommendations and Considerations for Prophylaxis[3]

Clean (Class I)*	Cefazolin 2 gram I.V. or ampicillin/sulbactam are recommended in clean procedures.
Clean-contaminated (Class II)	Cefazolin or ampicillin/sulbactam are recommended in clean-contaminated procedures.
Contaminated (Class III)	Cefoxitin is usually the first choice in contaminated procedures or Ceftriaxone + Metronidazole or Cefazolin + Metronidazole or Combination of aminoglycoside + clindamycin used in case of allergy to cephalosporins.

*Prophylactic antibiotics are indicated in clean operations if:

- The patient has host risk factors (obesity, liver disease...etc.).
- The operation involves placement of prosthetic material.

N.B. Antibiotics are given I.V. one hour before surgery as a single dose.

2- Diabetic Foot Infections

Overview

Diabetic foot is condition that results from complications secondary to diabetes. These secondary complications include neuropathy, microvascular disease, and changes in anatomy.[4]

Clinical manifestations of infection include:[5]

- Mild: More than 2 of purulence, erythema, pain, tenderness, warmth or induration. Any cellulitis/erythema extends ≤2 cm around ulcer and infection is limited to skin/superficial subcutaneous tissues. No local complications or systemic illness.
- Moderate: Infection in patient who is systemically well & metabolically stable but has any of: cellulitis extending >2 cm; lymphangitis; spread beneath fascia; deep tissue abscess; gangrene; muscle, tendon, joint or bone involved.

- Severe: Infection in a patient with systemic toxicity or metabolic instability.

Treatment Recommendations and Considerations[6]

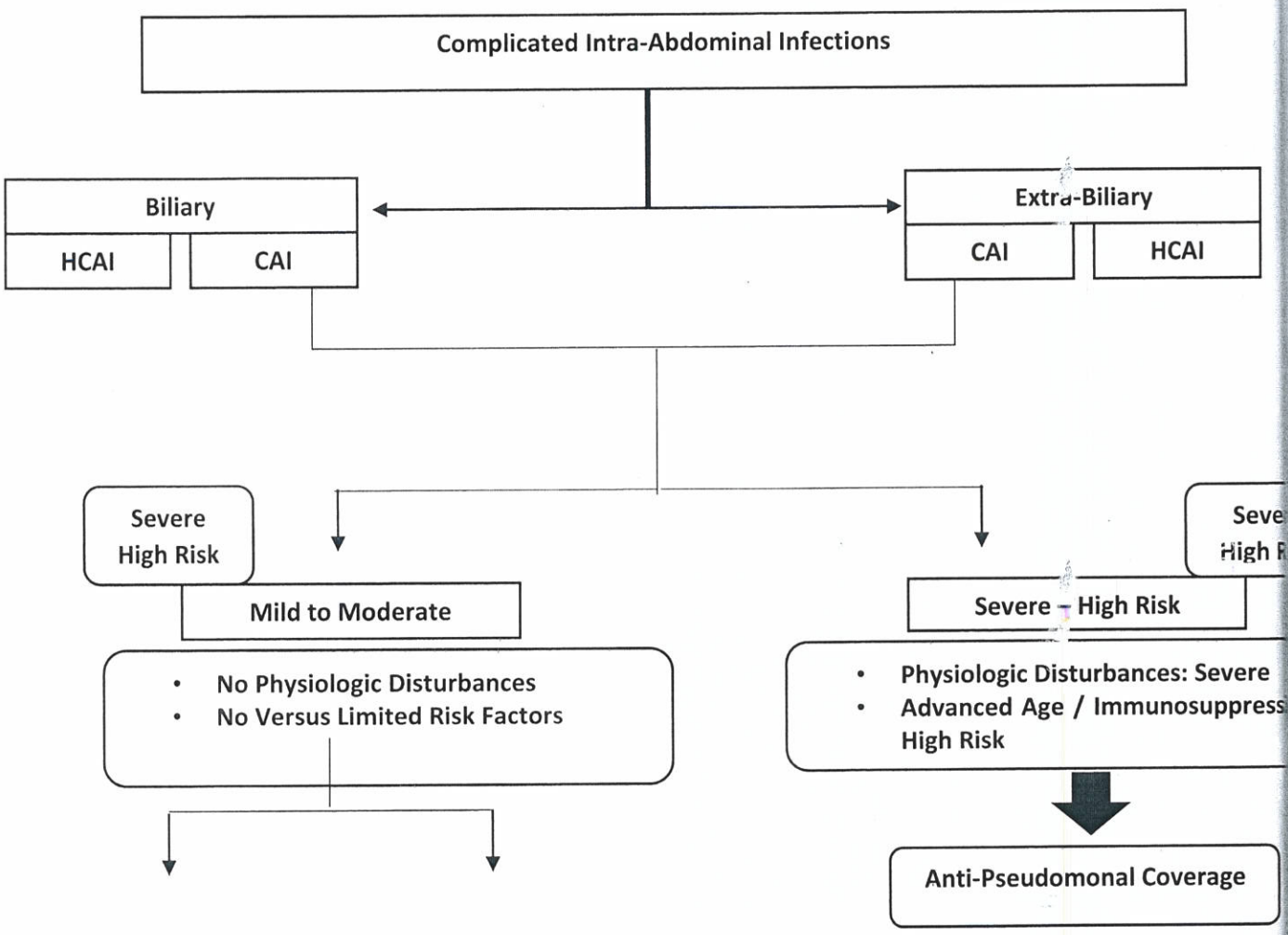
Infection Severity	Probable Pathogen(s)	Antibiotic Agent
Mild (usually treated with oral agent(s))	- Staphylococcus aureus MSSA); - Streptococcus spp	Clindamycin-Amoxacillin-Clavuliniate-Dicloxacillin
		Clindamycin
		Amoxicillin-clavulanate
	- Methicillin-resistant S. aureus (MRSA)	
		Trimethoprim/sulfamethoxazole
Moderate (may be treated with oral or initial parenteral agent(s))	- MSSA; Streptococcus spp; - Enterobacteriaceae; obligate anaerobes	Levofloxacin
		Cefoxitin
		Ceftriaxone
		Ampicillin-sulbactam Moxifloxacin
Severe		Ertapenem
		Meropenem-Tigecycline
		Levofloxacin with clindamycin
		Imipenem-cilastatin
	- MRSA	Linezolid
		Daptomycin
		Vancomycin
	- Pseudomonas aeruginosa	Piperacillin-tazobactam-meropenem-imipenem-clistin
	- MRSA, - Enterobacteriaceae, - Pseudomonas, and - obligate anaerobes	Vancomycin plus one of the following: ceftazidime, cefepime, piperacillin-tazobactam, meropenem-imipenem-clictin

3- Complicated Intra-abdominal Infection

Overview

Intraabdominal infection refers to cluster of diseases, and not a single condition. The condition results from inflammatory response to microorganisms in the peritoneal cavity. The extent of infection determines the complexity of the condition, with more serious conditions being complex.[7]

Treatment Recommendations and Considerations[8]



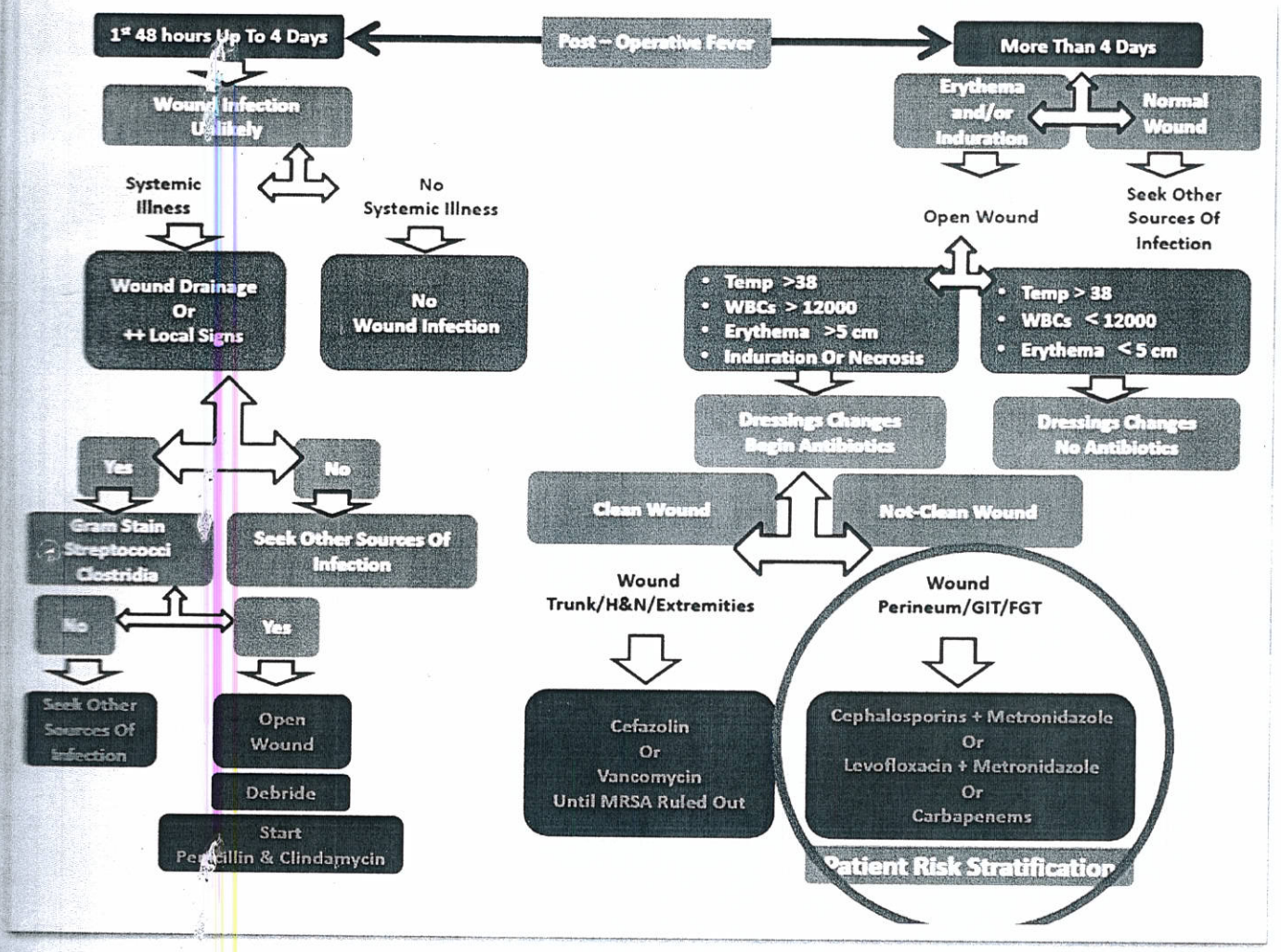
3rd generation cephalosporin
+metronidazole

1-Rec.abd.surgery
2-post-operative patient
- 4th generation
  - Ertapenem
  - Pepracillin-tazobactam

- Meropenem
- Imipenem-colistin
- Piperacillin- tazobactam

CAI: Community Acquired Intra-abdominal Infection.
HCAI: High Risk Complicated Intra-abdominal Infection=hospital infection.

Surgical Site Infection[8]



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(i) Chapter 3: Guidelines for the Assessment and Management of Major Trauma

Overview

A major trauma is defined as an injury that poses a life-changing or threatening disability.[1]

Hospital Management of Major Trauma: Recommendations with Implications for Service Delivery[2]

Clinical Area	Interventions	Recommendations
Circulatory access	Peripheral intravenous access	For circulatory access in patients with major trauma in hospital settings: - use peripheral intravenous access or - if peripheral intravenous access fails, consider intra-osseous access while central access is being achieved.
	Intra-osseous access	For circulatory access in patients with major trauma in hospital settings: - use peripheral intravenous access or - if peripheral intravenous access fails, consider intra-osseous access while central access is being achieved.
Documentation	Standardized documentation used throughout a trauma network	- Ensure that pre-hospital documentation is standardized within a trauma network, for example using the Royal College of Physicians' Professional guidance on the structure and content of ambulance records. - Ensure that hospital documentation is standardized within a trauma network and there are systems that allow healthcare professionals access to all relevant and current clinical data at different points in the care pathway. This could be by using compatible electronic medical records such as a picture archiving and communication system (PACS) and an image exchange portal.
	Pre-alert information received by senior nurse or trauma team leader in the	- A senior nurse or trauma team leader in the emergency department should receive the pre-alert information and determine the level of trauma team response according to agreed and written local guidelines.

	emergency department, who determines the level of trauma team response	
	Documentation completed by designated member of trauma team and checked by trauma team leader	- One member of the trauma team should be designated to record all trauma team findings and interventions as they occur (take 'contemporaneous notes'). - The trauma team leader should be responsible for checking the information recorded to ensure that it is complete.
Hematology	Immediate hematology consultation for anticoagulation reversal	- Consult a hematologist immediately for advice on adults (16 or over) who have active bleeding and need reversal of any anticoagulant agent other than a vitamin K antagonist. - Consult a hematologist immediately for advice on children (under 16s) with major trauma who have active bleeding and may need reversal of any anticoagulant agent.
	Laboratory testing of coagulation to guide blood product protocol	For patients with active bleeding, start with a fixed-ratio protocol for blood components and change to a protocol guided by laboratory coagulation results at the earliest opportunity.
	Plasma and red blood cells for fluid replacement	- For adults (16 or over) use a ratio of 1 unit of plasma to 1 unit of red blood cells to replace fluid volume. - For children (under 16s) use a ratio of 1 part plasma to 1 part red blood cells, and base the volume on the child's weight.
Information and support for patients, family members and carers	A healthcare professional to facilitate delivery of information	Major Trauma - The trauma team structure should include a clear point of contact for providing information to patients, family members and carers. - (Major trauma: service delivery (this guideline)) The key worker should: ➢ act as a single point of contact for patients, family members and carers, and the healthcare professionals involved in their care ➢ provide information on how the hospital and the trauma system works (major trauma centers, trauma units and teams) ➢ attend ward rounds and ensure that all action plans from the ward round are carried out in a timely manner

		➢ provide patient advocacy ➢ ensure that there is a management plan and identify any conflicts Fractures (complex) - Do not use a tiered team response in trauma units. Spinal injury - The trauma team structure should include a clear point of contact for providing information to the patients, their family members and carers.
	A dedicated member of staff for unaccompanied children and vulnerable adults to contact next of kin and provide personal support	Fractures (complex) - Allocate a dedicated member of staff to contact the next of kin and provide support for unaccompanied children and vulnerable adults. Major Trauma - Allocate a dedicated member of staff to contact the next of kin and provide support for unaccompanied children and vulnerable adults. Major trauma: service delivery (this guideline) - Allocate a dedicated member of staff to contact the next of kin and provide support for unaccompanied children and vulnerable adults. Spinal injury - Allocate a dedicated member of staff to contact the next of kin and provide support for unaccompanied children and vulnerable adults.
Radiology, imaging	Immediate CT	Major Trauma - Consider immediate CT for adults (16 or over) with suspected chest trauma without severe respiratory compromise who are responding to resuscitation or whose hemodynamic status is normal. - Consider immediate CT for patients with suspected hemorrhage if they are responding to resuscitation or if their hemodynamic status is normal.
	Whole-body CT	Fractures (complex) - Use whole-body CT (consisting of a vertex-to-toes scanogram followed by CT from vertex to mid-thigh) in adults (16 or over) with blunt major trauma and suspected multiple injuries. Patients should not be repositioned during whole-body CT.

		Major Trauma - Use whole-body CT (consisting of a vertex-to-toes scanogram followed by a CT from vertex to mid-thigh) in adults (16 or over) with blunt major trauma and suspected multiple injuries. Patients should not be repositioned during whole-body CT.
	Immediate eFAST (extended focused assessment with sonography for trauma)	Major Trauma - Consider immediate chest X-ray and/or eFAST (extended focused assessment with sonography for trauma) as part of the primary survey to assess chest trauma in adults (16 or over) with severe respiratory compromise.
	FAST (focused assessment with sonography for trauma)	Major Trauma - Limit diagnostic imaging (such as chest and pelvis X-rays or FAST [focused assessment with sonography for trauma]) to the minimum needed to direct intervention in patients with suspected hemorrhage and hemodynamic instability who are not responding to volume resuscitation.
	Ultrasound	Major Trauma - Consider chest X-ray and/or ultrasound for first-line imaging to assess chest trauma in children (under 16s).
	X-ray	Major Trauma - Consider immediate chest X-ray and/or eFAST (extended focused assessment with sonography for trauma) as part of the primary survey to assess chest trauma in adults (16 or over) with severe respiratory compromise. - Consider chest X-ray and/or ultrasound for first-line imaging to assess chest trauma in children (under 16s). - Limit diagnostic imaging (such as chest and pelvis X-rays or FAST [focused assessment with sonography for trauma]) to the minimum needed to direct intervention in patients with suspected hemorrhage and hemodynamic instability who are not responding to volume resuscitation.
	Immediate radiology consultation to interpret results of imaging	Spinal injury - Use simple dressings with direct pressure to control external hemorrhage.
Radiology, interventional	Interventional radiology for hemorrhage	Major trauma: service delivery (this guideline) - Ensure that interventional radiology and definitive open surgery are equally and immediately

	control	available for hemorrhage control in all patients with active bleeding. (For more information see the section on interventional radiology in the NICE guideline 'Major trauma' and the section on controlling pelvic hemorrhaging the NICE guideline 'Fractures (complex)'. Fractures (complex) For first-line invasive treatment of active arterial pelvic bleeding, use: - interventional radiology if emergency laparotomy is not needed for abdominal injuries - pelvic packing if emergency laparotomy is needed for abdominal injuries. Major trauma - Use interventional radiology techniques in patients with active arterial pelvic hemorrhage unless immediate open surgery is needed to control bleeding from other injuries. - Consider interventional radiology techniques in patients with solid-organ (spleen, liver or kidney) arterial hemorrhage. - Consider a joint interventional radiology and surgery strategy for arterial hemorrhage that extends to surgically inaccessible regions. - Use an endovascular stent graft in patients with blunt thoracic aortic injury.
Surgery	Damage control surgery	Major trauma - Use damage control surgery in patients with hemodynamic instability who are not responding to volume resuscitation.
	Definitive surgery	Major trauma - Consider definitive surgery in patients with hemodynamic instability who are responding to volume resuscitation. - Use definitive surgery in patients whose hemodynamic status is normal.
	Immediate surgery to explore hard signs of vascular injury	Fractures (complex) - Perform immediate surgical exploration if hard signs of vascular injury persist after any necessary restoration of limb alignment and joint reduction.
Surgery, neurosurgery and spinal	Specialist neurosurgical or spinal surgeon on call immediately for patients with a	Spinal injury - For people in a trauma unit who have a spinal cord injury, the trauma team leader should immediately contact the specialist neurosurgical or spinal surgeon on call in the

	spinal cord injury	trauma unit or nearest major trauma center. - For people in a major trauma center who have a spinal cord injury, the trauma team leader should immediately contact the specialist neurosurgical or spinal surgeon on call.
	Local spinal cord injury center consultant	Spinal injury - For people who have a spinal cord injury, the specialist neurosurgical or spinal surgeon at the major trauma center or trauma unit should contact the linked spinal cord injury center consultant within 4 hours of diagnosis to establish a partnership of care.
Surgery, orthopedic	Surgery for pilon fractures, performed within 24 hours of the injury	Fractures (complex) - Create a definitive management plan and perform initial surgery (temporary or definitive) within 24 hours of injury in adults (skeletally mature) with displaced pilon fractures.
Surgery, orthopedic and plastic	Surgery performed concurrently by consultants in orthopedic and plastic surgery to achieve debridement, fixation and cover of an open fracture	Fractures (complex) - Surgery to achieve debridement, fixation and cover of open fractures of the long bone, hindfoot or midfoot should be performed concurrently by consultants in orthopedic and plastic surgery (a combined orthoclastic approach).
Surgery, pelvic	Consultation with pelvic surgeon for unstable pelvic fracture	Fractures (complex) - Before removing the pelvic binder, agree with a pelvic surgeon how a mechanically unstable fracture should be managed.
Wound care	Negative pressure wound therapy for open fracture wounds	Fractures (complex) - Consider negative pressure wound therapy after debridement if immediate definitive soft tissue cover has not been performed.
	Photographs of open fracture wounds, taken in accordance with a protocol	Fractures (complex) - All trusts receiving patients with open fractures must have information governance policies in place that enable staff to take and use photographs of open fracture wounds for clinical decision-making 24 hours a day. Protocols must also cover the handling and storage of photographic images of open fracture wounds.

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(i) Chapter 4: Treatment of VTE

Initial management:

- Home treatment:
- For patients with uncomplicated deep vein thrombosis (DVT), the American Society of Hematology (ASH) guideline panel suggests offering home treatment over hospital treatment.
- Also, ESVS recommends outpatient treatment for VTE (IA.)
- For patients with pulmonary embolism (PE) with a low risk for complications, the ASH guideline panel suggests offering home treatment over hospital treatment.

Patient ambulation:

In patients with acute DVT of the leg, ACCP suggests early ambulation over initial bed rest (Grade 2C)

Anticoagulation therapy for the treatment of deep vein thrombosis:

- The treatment of DVT has been dominated using IV UFH or subcutaneous LMWH for the initial acute phase (up to 10 days), followed by a VKA such as warfarin, or LMWH for the principal phase of treatment (three months).
- The use of DOACs was a major advance in the treatment of DVT as these medications have a similar efficacy to and a better safety profile than VKAs
- All these drugs have a similar efficacy in the treatment of acute symptomatic VTE, with a significant reduction in the risk of major bleeding in both provoked and unprovoked DVT.
  For patients with DVT and/or PE, the ASH guideline panel suggests using direct oral anticoagulants (DOACs) over vitamin K antagonists (VKAs)

Anticoagulation therapy for the treatment of provoked deep vein thrombosis:

- Provoking factors for DVT can be transient (such as surgery or hospital admission with bed rest [strict or with bathroom privileges] lasting at least three days) or persistent (such as thrombophilia) and may be associated with varying risks of DVT recurrence, Treatment options for cancer associated venous thrombosis (CAVT).

- The introduction of DOACs is the recommended first line treatment for DVT of lower limb.
- Direct oral anticoagulants (DOACs) such as dabigatran, Apixaban, edoxaban, and rivaroxaban are direct oral anticoagulants that directly inhibit factor Xa and they don't require parenteral initial dose to be effective, but Dabigatran is administered at a dose of 150 mg twice per day, which is started after at least five days of initial parenteral anticoagulation until it's activated in plasma, and also Edoxaban, like dabigatran, requires at least five days of parenteral anticoagulation before starting oral dosing at 60 mg twice per day.
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- While Apixaban is started without initial parenteral therapy but requires a higher dose (10 mg twice per day) for seven days, followed by the standard treatment dose of 5 mg twice per day, and Rivaroxaban is started without initial parenteral therapy but requires a higher dose (15 mg twice per day) for three weeks, followed by the standard treatment dose of 20 mg once per day.

Duration of anticoagulation therapy for DVT:

- The reduced dose of rivaroxaban and apixaban is also an option for most patients requiring extended treatment, with further reductions of bleeding without a compromise in their efficacy
- The biological behavior of provoked DVT with persistent or transient minor risk factors is close to unprovoked DVT, so a strategy for extended anticoagulation like unprovoked DVT should be discussed with the patient.

Strategies to reduce the risk of recurrence:

The likelihood of recurrent DVT after discontinuation of anticoagulation is high, particularly in patients with unprovoked DVT. For patients with provoked

DVT, the overall recurrence rate after stopping anticoagulation is approximately half the rate for unprovoked DVT,157 but may be as high as the population with unprovoked DVT for patients with minor risk factors, and much lower in patients with major, transient provoking factors. Consequently, several strategies and clinical trials have been tested to reduce the risk. Unfractionated heparin, low molecular weight heparins, vitamin K antagonists, and direct oral anticoagulants. The wide range of anticoagulants now available allows individualized management of patients with DVT. Aspirin. Prior to the DOACs, aspirin was widely investigated for the prevention of recurrent VTE

Monitoring and surveillance after deep vein thrombosis

The Duration of Anticoagulation based on Compression Ultrasonography (DACUS) study, ultrasound was used to determine the presence of residual obstruction. The term residual vein thrombosis is used in the original publication, but residual venous obstruction (RVO) now is the preferred terminology. Residual obstruction was considered present if there was non-compressibility of 40% of the vein diameter. Patients with a first episode of DVT, treated by anticoagulation for three months, were managed according to the presence of RVO.

Treatment of deep vein thrombosis: use of inferior vena cava filters:

- It should be noted that the sole purpose of IVC filters is to prevent PE and therefore to reduce PE associated morbidity and mortality.
- Nevertheless, IVC filters are the only viable treatment option for patients with DVT where anticoagulation is contra indicated, although randomized trials are urgently needed.170 Although an IVC filter is a possible means of minimizing major PE, it has no positive effect on the DVT itself.

Treatment of deep vein thrombosis: early thrombus removal and stenting

The increasing recognition that after best executed anticoagulant management PTS develops in 25% e 75% of patients with extensive lower extremity DVT has inspired ongoing attempts at early thrombus removal. Research has clearly linked the development and progression of PTS to the persistence of venous thrombus and venous valvular injury that stems from the inflammatory reaction to this thrombus. There have been four RCTs (TORPEDO [Thrombus Obliteration by Rapid

Percutaneous Endovenous Intervention in Deep Venous Occlusion], CaVenT [Catheter- Directed Venous Thrombolysis in Acute Iliofemoral Vein Thrombosis], ATTRACT, and CAVA [CAtheter Versus Anticoagulation Alone for Acute Primary Iliofemoral DVT]) examining the effectiveness of early thrombus removal strategies.

Cancer associated deep vein thrombosis:

Although malignancy has been recognized as a risk factor for DVT for over a century, an increased risk of recurrent VTE during anticoagulant treatment in such patients vs. those without malignancy had not been described until relatively recently. A recent meta-analysis identified 23 RCTs with 6 980 patients.365 LMWHs were more effective than VKAs in preventing recurrent VTE (RR 0.58, 9CI 0.45 e 0.75) and DVT (RR 0.44, 95% CI 0.29 e 0.69). DOACs were more effective than VKAs in preventing recurrent VTE (RR 0.65, 95% CI 0.45 e 0.95), but equivalent regarding overall mortality or bleeding. However, anti-Xa DOACs were more effective than VKAs (RR for VTE 0.64, 95% CI 0.42 e 0.97) and caused less bleeding, although major bleeding was reduced only with DOACs no requiring initial parenteral anticoagulation with heparin, i.e., rivaroxaban and apixaban (RR 0.45, 95% CI 0.21 e 0.97).

Treatment of deep vein thrombosis: early thrombus removal and stenting

The increasing recognition that after best executed anticoagulant management PTS develops in 25% e 75% of patients with extensive lower extremity DVT has inspired ongoing attempts at early thrombus removal. Research has clearly linked the development and progression of PTS to the persistence of venous thrombus and venous valvular injury that stems from the inflammatory reaction to this thrombus. There have been four RCTs (TORPEDO [Thrombus Obliteration by Rapid Percutaneous Endovenous Intervention in Deep Venous Occlusion], CaVenT [Catheter- Directed Venous Thrombolysis in Acute Iliofemoral Vein Thrombosis], ATTRACT, and CAVA [CAtheter Versus Anticoagulation Alone for Acute Primary Iliofemoral DVT]) examining the effectiveness of earlyremoval strategies.

(i) Chapter 5: Guidelines for the Assessment and Management of Thyroid Disease

Overview

- Goiter is the enlargement of thyroid gland. It may be simple, toxic, inflammatory and neoplastic.
- The most common thyroid disease in the community is simple (diffuse) physiological goiter.
- U/S has been used in epidemiological studies to assess thyroid size, leading to much higher estimates of goiter prevalence.
- In contrast, there is increase in frequency of thyroid nodules with age.
- Clinical apparent thyroid nodules were present in 6.4% of women and 1.5% of men.
- The prevalence of solitary thyroid nodule was 3% and MNG was 1%

Clinical presentation

Thyroid disease may present by:

1- Neck swelling (diffuse, nodular or solitary nodule, mid line or lateral)
2- Thyroid incidentaloma
3- Thyroid dysfunction (hyperthyroidism, hypothyroidism)

Diagnosis Recommendations

Investigations

1- Thyroid function tests (TSH, free T3 and free T4)
2- Tumor markers (thyroglobulin, calcitonin and CEA)
3- Neck U/S or CT
4- Radio-iodine scan
5- FNACB

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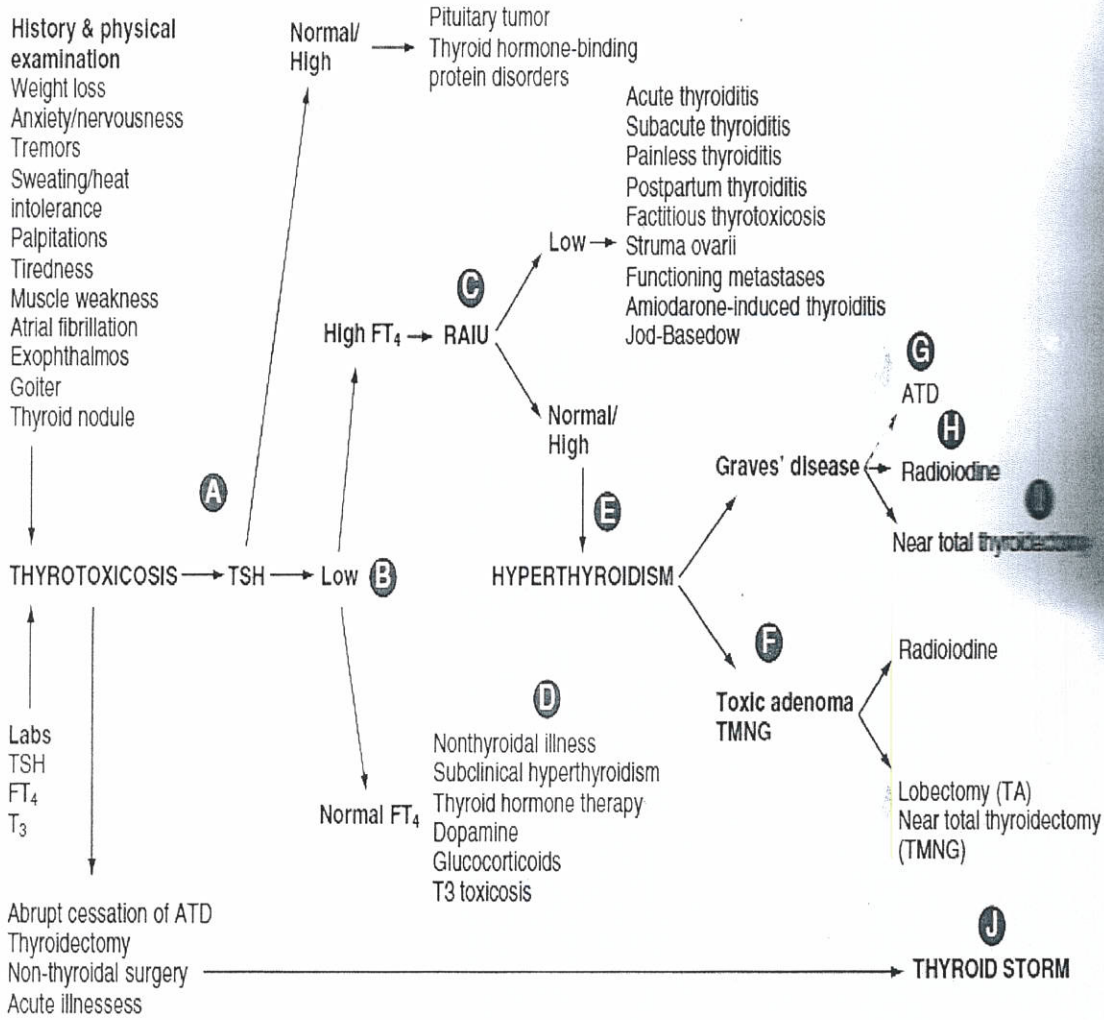
1.5%

Staging

T0	No evidence of primary tumor
T1a	Tumor ≤1 cm, without extrathyroidal extension
T1b	Tumor >1 cm but ≤2 cm in greatest dimension, without extrathyroidal extension
T2	Tumor >2 cm but ≤4 cm in greatest dimension, without extrathyroidal extension.
T3	Tumor >4 cm in greatest dimension limited to the thyroid *or* Any size tumor with minimal extrathyroidal extension (e.g., extension into sternothyroid muscle or perithyroidal soft tissues).
T4a	Tumor of any size extending beyond the thyroid capsule to invade subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve.
T4b	Tumor of any size invading prevertebral fascia or encasing carotid artery or mediastinal vessels
N0	No metastatic nodes
N1a	Metastases to level VI (pretracheal, paratracheal, and prelaryngeal/Delphian lymph nodes).
N1b	Metastases to unilateral, bilateral, or contralateral cervical (levels I, II III, IV, or V) or retropharyngeal or superior mediastinal lymph nodes (level VII)
M0	No distant metastases
M1	Distant metastases

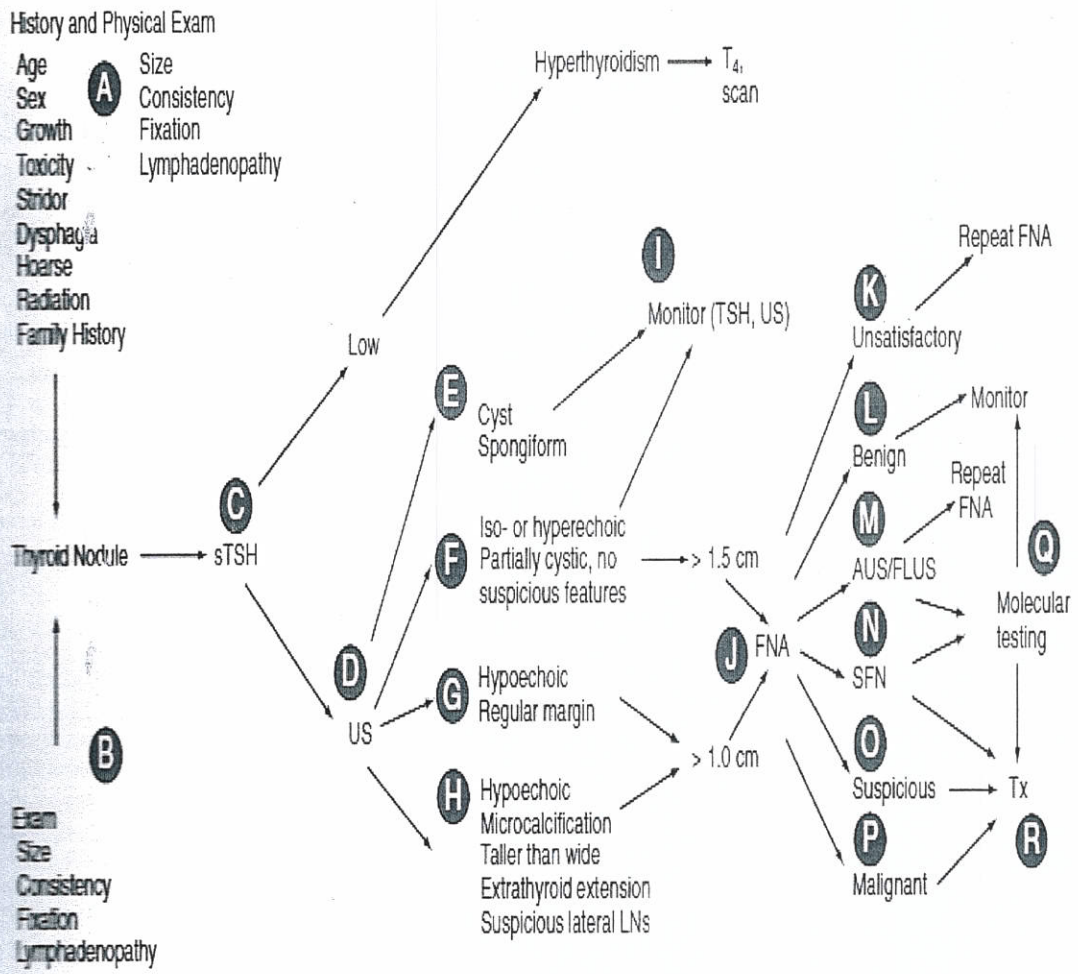
Treatment Recommendations and Considerations

1- Hyperthyroidism

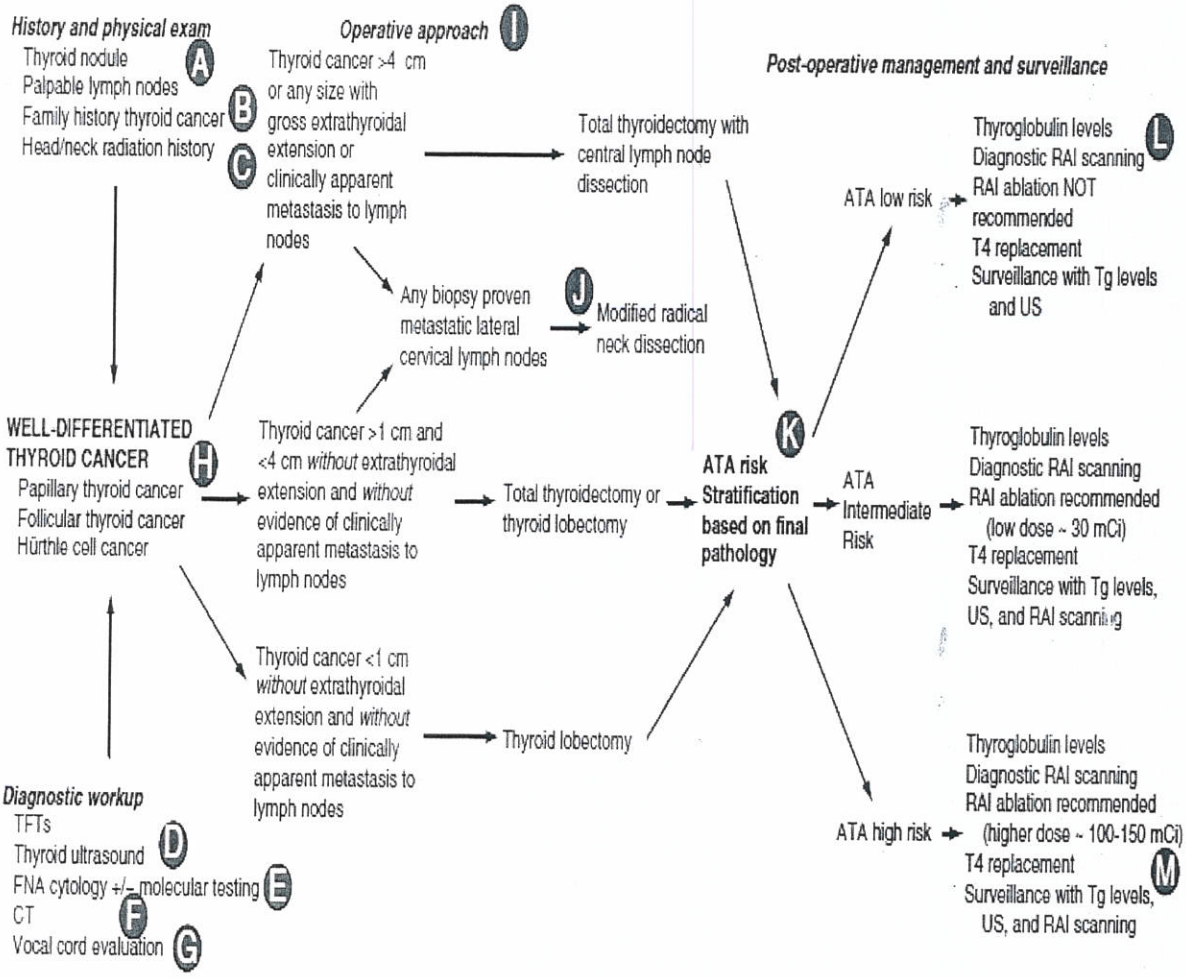


2-

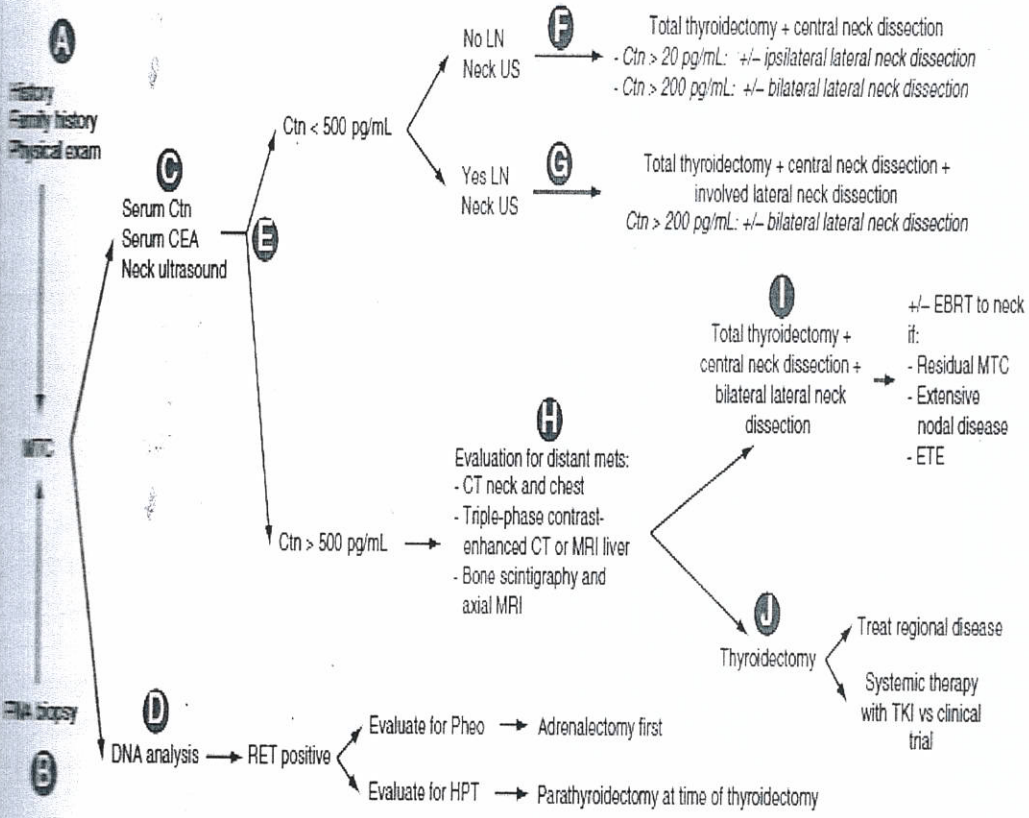
3- Thyroid nodules



4- DTC

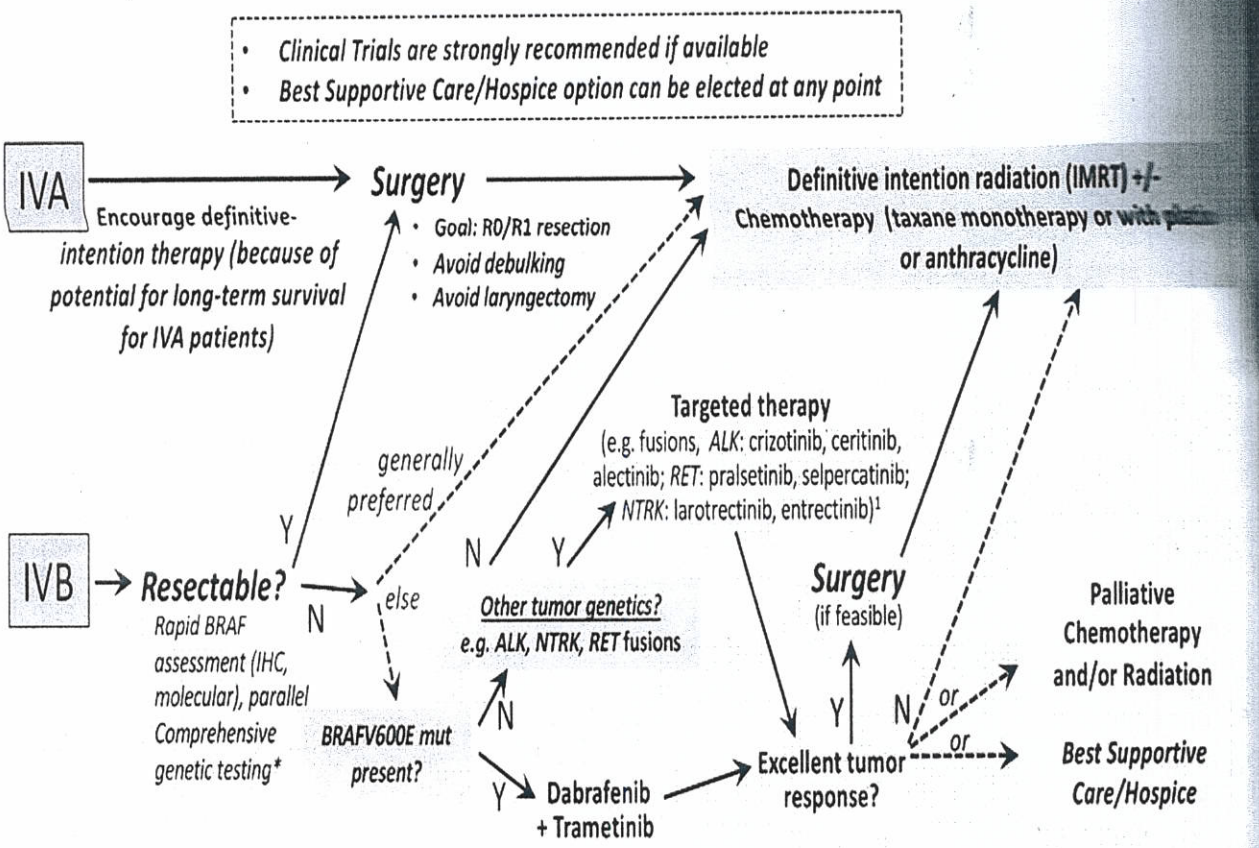

History and physical exam
Thyroid nodule
Palpable lymph nodes
Family history thyroid cancer
Head/neck radiation history
A
B
C
Operative approach
I
Thyroid cancer >4 cm or any size with gross extrathyroidal extension or clinically apparent metastasis to lymph nodes
Total thyroidectomy with central lymph node dissection
Any biopsy proven metastatic lateral cervical lymph nodes
J
Modified radical neck dissection
Post-operative management and surveillance
ATA low risk
Thyroglobulin levels
Diagnostic RAI scanning
L
RAI ablation NOT recommended
T4 replacement
Surveillance with Tg levels and US
WELL-DIFFERENTIATED THYROID CANCER
H
Papillary thyroid cancer
Follicular thyroid cancer
Hürthle cell cancer
Thyroid cancer >1 cm and <4 cm without extrathyroidal extension and without evidence of clinically apparent metastasis to lymph nodes
Total thyroidectomy or thyroid lobectomy
K
ATA risk Stratification based on final pathology
ATA Intermediate Risk
Thyroglobulin levels
Diagnostic RAI scanning
RAI ablation recommended (low dose ~ 30 mCi)
T4 replacement
Surveillance with Tg levels, US, and RAI scanning
Thyroid cancer <1 cm without extrathyroidal extension and without evidence of clinically apparent metastasis to lymph nodes
Thyroid lobectomy
ATA high risk
Thyroglobulin levels
Diagnostic RAI scanning
RAI ablation recommended (higher dose ~ 100-150 mCi)
T4 replacement
M
Surveillance with Tg levels, US, and RAI scanning
Diagnostic workup
TFTs
Thyroid ultrasound
D
FNA cytology +/- molecular testing
E
CT
F
Vocal cord evaluation
G

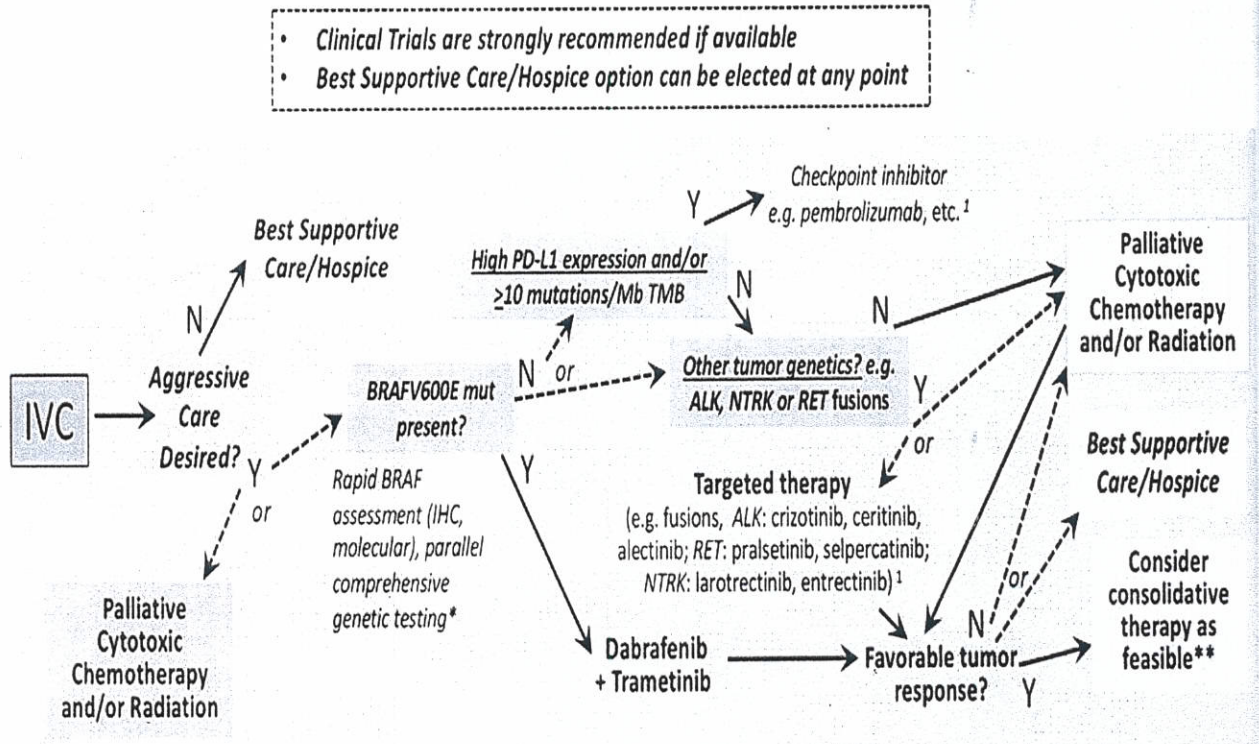
5- MTC



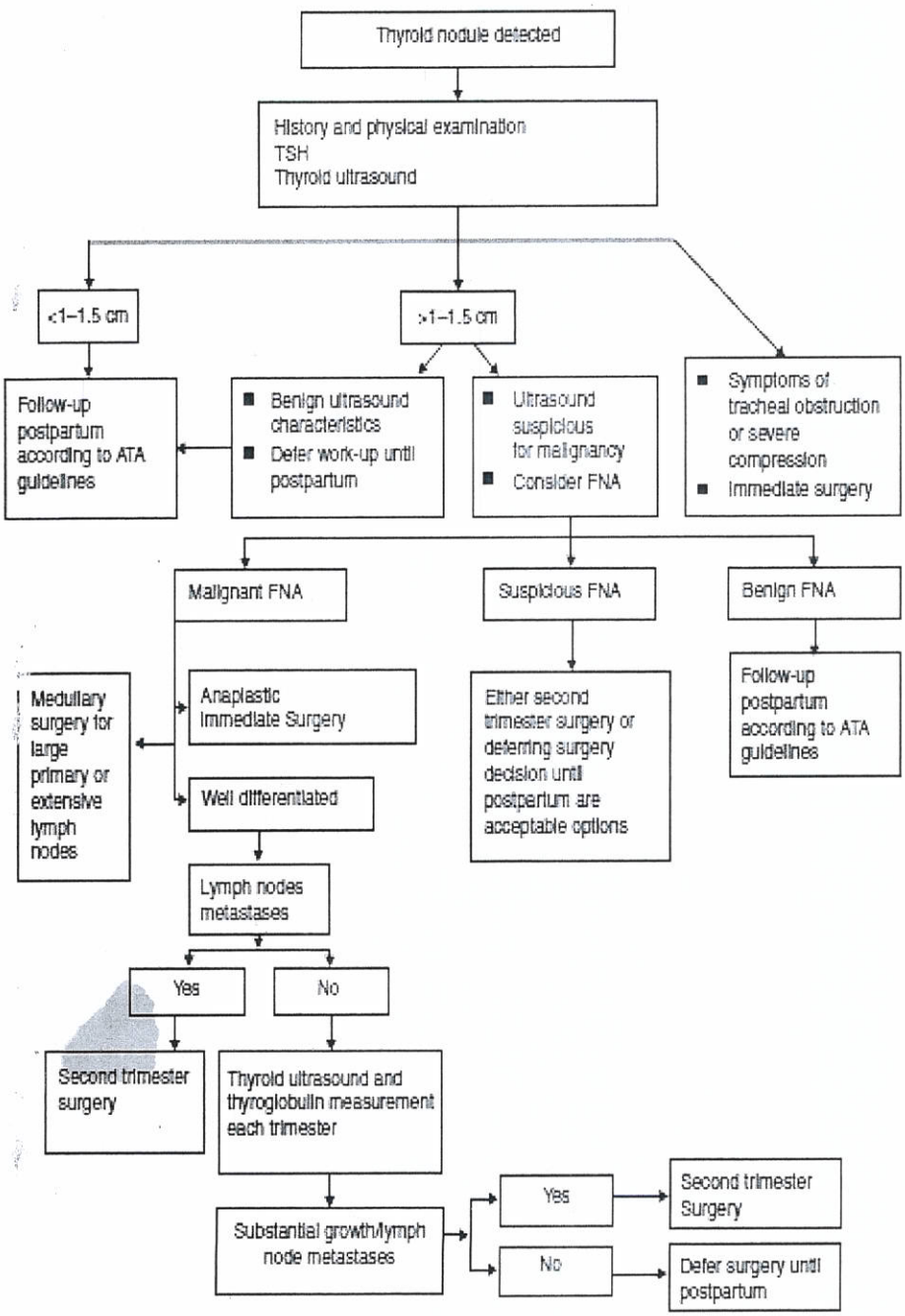
MTC (medullary thyroid cancer); FNA (fine needle aspiration); Ctn (calcitonin); CEA (carcinoembryonic antigen); LN (lymph nodes); US (ultrasound); mets (metastases); Pheo (pheochromocytoma); HPT (hyperparathyroidism); TKI (tyrosine kinase inhibitors)

6- ATC

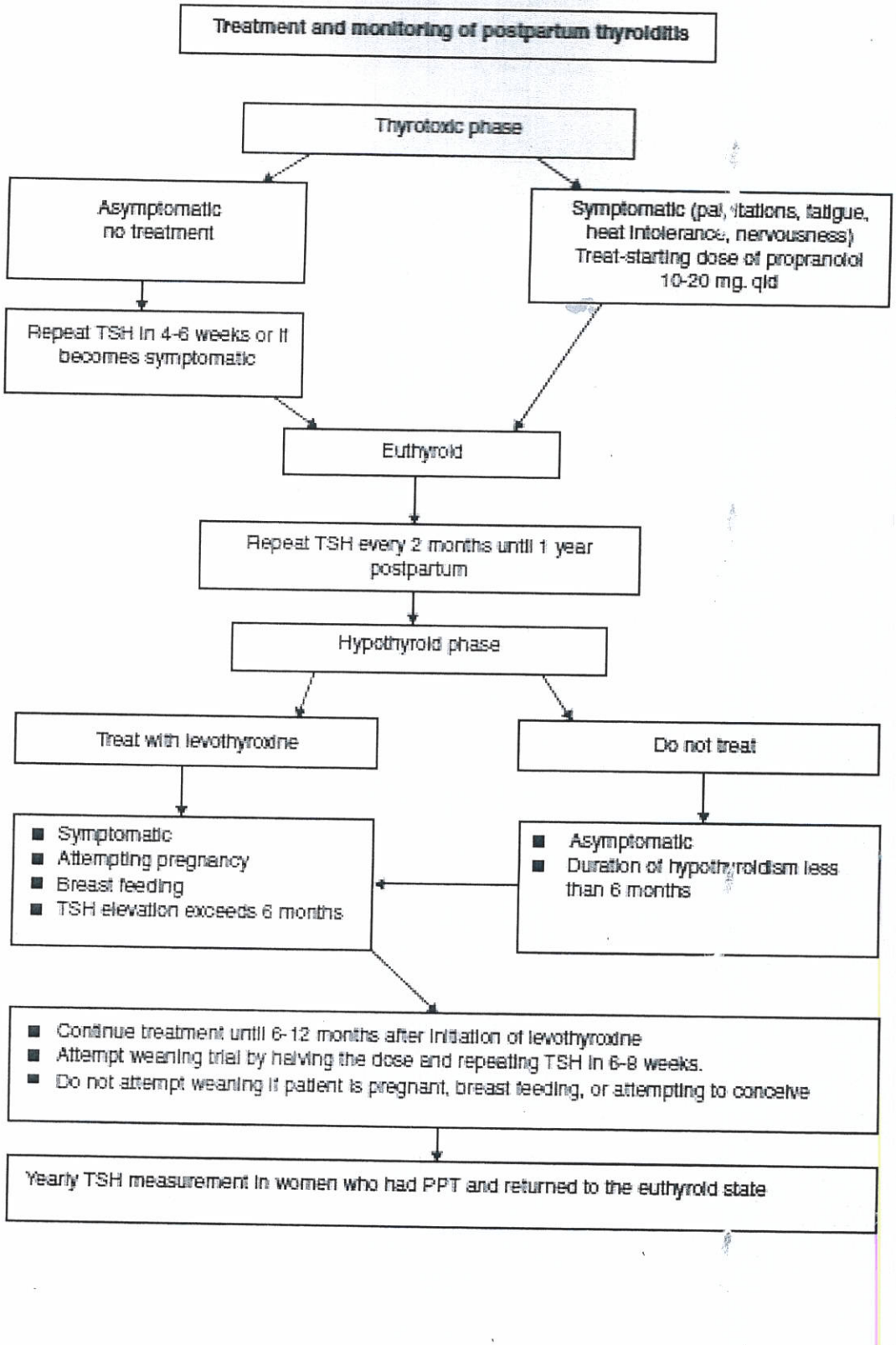

• Clinical Trials are strongly recommended if available
• Best Supportive Care/Hospice option can be elected at any point
IVA
Encourage definitive-intention therapy (because of potential for long-term survival for IVA patients)
Surgery
• Goal: R0/R1 resection
• Avoid debulking
• Avoid laryngectomy
Definitive intention radiation (IMRT) +/- Chemotherapy (taxane monotherapy or with platin or anthracycline)
IVB
Resectable?
Rapid BRAF assessment (IHC, molecular), parallel Comprehensive genetic testing*
generally preferred
else
Y
N
BRAFV600E mut present?
Other tumor genetics? e.g. ALK, NTRK, RET fusions
Targeted therapy
(e.g. fusions, ALK: crizotinib, ceritinib, alectinib; RET: pralsetinib, selpercatinib; NTRK: larotrectinib, entrectinib)[1]
Dabrafenib + Trametinib
Excellent tumor response?
Surgery
(if feasible)
or
Palliative Chemotherapy and/or Radiation
Best Supportive Care/Hospice


• Clinical Trials are strongly recommended if available
• Best Supportive Care/Hospice option can be elected at any point
IVC
Aggressive Care Desired?
Best Supportive Care/Hospice
Palliative Cytotoxic Chemotherapy and/or Radiation
BRAFV600E mut present?
Rapid BRAF assessment (IHC, molecular), parallel comprehensive genetic testing*
High PD-L1 expression and/or ≥10 mutations/Mb TMB
Checkpoint inhibitor e.g. pembrolizumab, etc.[1]
Other tumor genetics? e.g. ALK, NTRK or RET fusions
Targeted therapy
(e.g. fusions, ALK: crizotinib, ceritinib, alectinib; RET: pralsetinib, selpercatinib; NTRK: larotrectinib, entrectinib)[1]
Dabrafenib + Trametinib
Favorable tumor response?
Palliative Cytotoxic Chemotherapy and/or Radiation
Best Supportive Care/Hospice
Consider consolidative therapy as feasible**
or

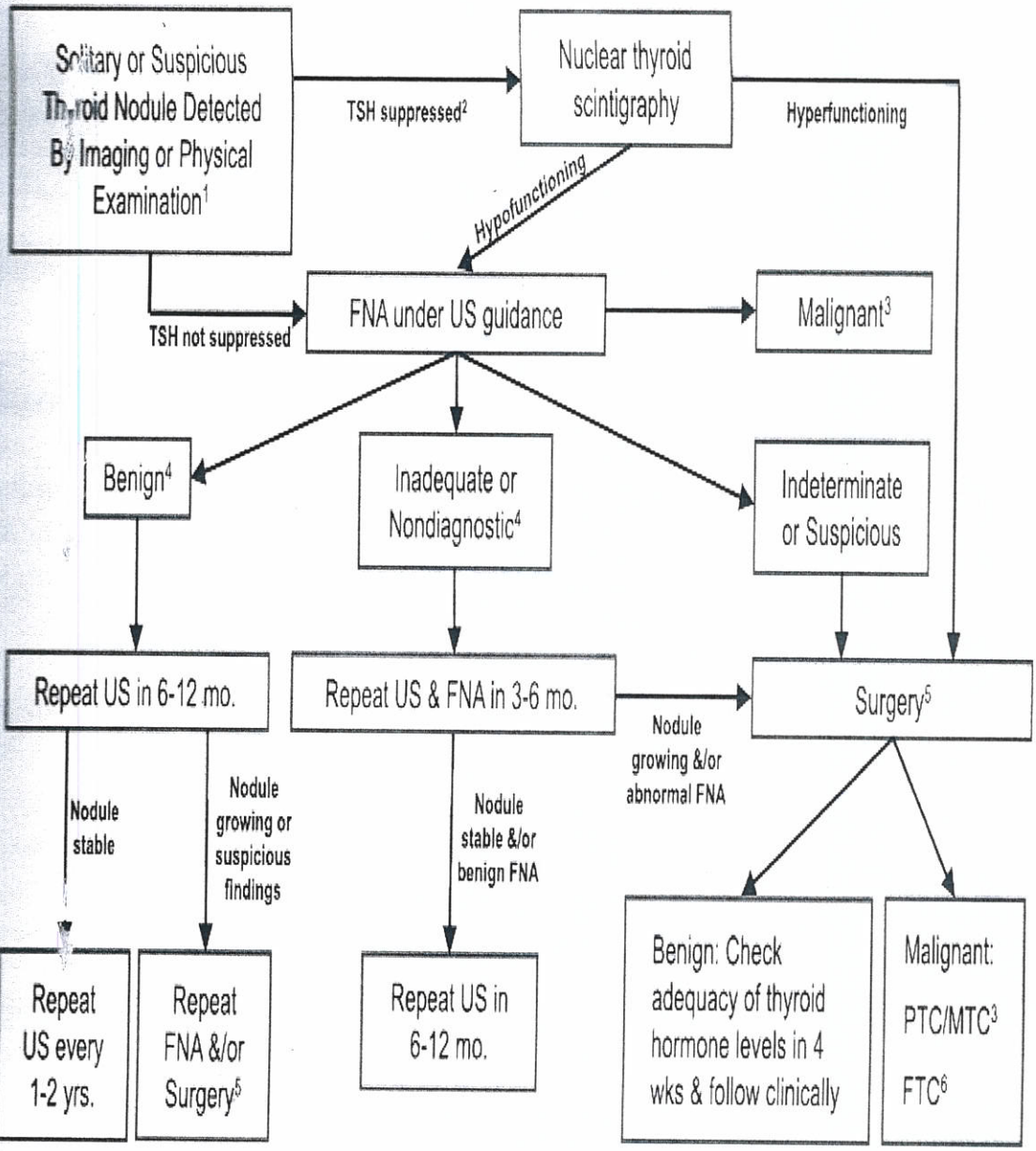
7- Thyroid Disease in Pregnancy



8- Post-partum Thyroiditis



DTC in children



Reference:

1- Haugen BR, Alexander EK, Bible KC, et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer. *Thyroid*. 2016;26(1):1-133. doi:10.1089/thy.2015.0020

(i) hapter 6: Guidelines for the Assessment and Management of Thyroid Cancer

Overview

- Thyroid cancer is a malignant condition that arises from parenchymal cells of the thyroid gland.[1]
- This guideline summary covers investigating all suspected thyroid disease and managing primary thyroid disease (related to the thyroid rather than the pituitary gland).[2]
- This summary does not include information on:[2]
  - Managing thyroid cancer or thyroid disease in pregnancy.
  - Managing and monitoring subclinical hypothyroidism.
  - Initial treatment in secondary/specialist care.

Diagnosis Recommendations

Indications for Tests for Thyroid Dysfunction[2]

- Consider tests for thyroid dysfunction for adults, children and young people if there is a clinical suspicion of thyroid disease, but bear in mind that 1 symptom alone may not be indicative of thyroid disease.
- Offer tests for thyroid dysfunction to adults, children and young people with:
  - type 1 diabetes or other autoimmune diseases, or
  - new-onset atrial fibrillation
- Consider tests for thyroid dysfunction for adults, children and young people with depression or unexplained anxiety.
- Consider tests for thyroid dysfunction for children and young people with abnormal growth, or unexplained change in behavior or school performance.
- Be aware that in menopausal women symptoms of thyroid dysfunction may be mistaken for menopause.

- Do not test for thyroid dysfunction during an acute illness unless you suspect the acute illness is due to thyroid dysfunction, because the acute illness may affect the test results.
- Do not offer testing for thyroid dysfunction solely because an adult, child or young person has type 2 diabetes.

Tests When Thyroid Dysfunction is Suspected[2]

- Consider measuring thyroid-stimulating hormone (TSH) alone for adults when secondary thyroid dysfunction (pituitary disease) is not suspected. Then:
  - ➢ if the TSH is above the reference range, measure free thyroxine (FT4) in the same sample
  - ➢ if the TSH is below the reference range, measure FT4 and free tri-iodothyronine (FT3) in the same sample
- Consider measuring both TSH and FT4 for:
  - ➢ adults when secondary thyroid dysfunction (pituitary disease) is suspected
  - ➢ children and young people (If the TSH is below the reference range, measure FT3 in the same sample.)
- Consider repeating the tests for thyroid dysfunction in the full guideline if symptoms worsen or new symptoms develop (but no sooner than 6 weeks from the most recent test)

Tests for People with Confirmed Thyrotoxicosis[2]

Adults

- Differentiate between thyrotoxicosis with hyperthyroidism (for example, Graves' disease or toxic nodular disease) and thyrotoxicosis without hyperthyroidism (for example, transient thyroiditis) in adults by:
  - ➢ measuring TSH receptor antibodies (TRAbs) to confirm Graves' disease
  - ➢ considering technetium scanning of the thyroid gland if TRAbs are negative
- Only consider ultrasound for adults with thyrotoxicosis if they have a palpable thyroid nodule.

Children and Young People

- Differentiate between thyrotoxicosis with hyperthyroidism (Graves' disease) and thyrotoxicosis without hyperthyroidism (for example, transient thyroiditis) in children and young people by:
  - measuring TPOAbs and TRAbs
  - considering technetium scanning of the thyroid gland if TRAbs are negative
- Only offer ultrasound to children and young people with thyrotoxicosis if they have a palpable thyroid nodule or the cause of thyrotoxicosis remains unclear following thyroid autoantibody testing and technetium scanning

Differential Diagnosis

Differential diagnosis involves primary thyroid lymphoma, toxic nodular goiter, benign thyroid nodule and cervical lymphadenopathy.[1]

Treatment Recommendations and Considerations

Initial Treatment of Thyrotoxicosis in Primary/Non-specialist Care[2]

- Be aware that transient thyrotoxicosis without hyperthyroidism usually only needs supportive treatment (for example, beta-blockers).
- Consider antithyroid drugs along with supportive treatment for adults with hyperthyroidism who are waiting for specialist assessment and further treatment.

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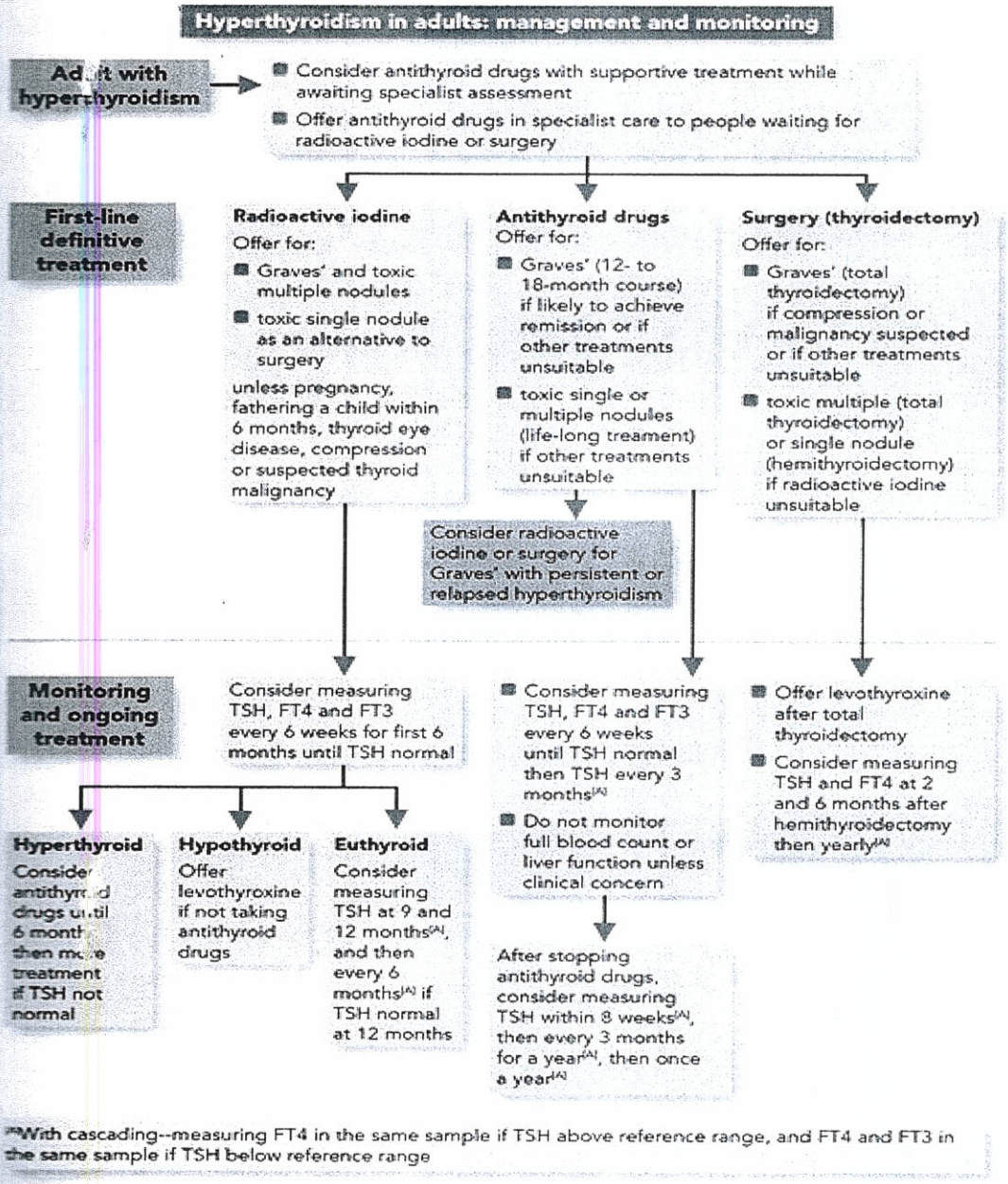
Hyperthyroidism in Adults: Management and Monitoring Considerations[2]



References:

1- Lee K, Anastasopoulou C, Chandran C, et al. Thyroid Cancer. [Update 2021 Jul 19]. In: StatPearls [Internet]. Treasure Island (FL): StatPear Publishing; 2021 Jan-. Available fron https://www.ncbi.nlm.nih.gov/books/NBK459299/

2- Guidelines.co.uk. 2020. *NICE thyroid disease guidance*. [online] Availab at: <https://www.guidelines.co.uk/eye-ear-nose-and-throat/nice-thyroi disease-guidance/455108.article> [Accessed 25 August 2021].

(i) Chapter 7: Guidelines for the Assessment and Management of Breast Cancer

Overview

Breast cancer is the most common cancer in women, with a lifetime risk of one in eight women. It is considered the second leading cause of cancer death in women.

There are multiple causes that play a role in the development of the disease, including age, family history, hormonal factors, reproductive risk factors, and others.

Diagnosis Recommendations

Clinical Assessment

1. History:

Patients seek medical advice most commonly for an abnormal mammogram, a breast mass, breast pain, nipple discharge, or skin changes.

History should include:

- Description and duration of signs and symptoms and their temporal relation to pregnancy, menstrual cycle, or previous trauma.
- Date of last menstrual period and regularity of the menstrual cycle.
- Age of menarche.
- No. of pregnancies and age at the first full term pregnancy.
- Lactational history.
- Age at natural or surgical menopause.
- Previous history of breast biopsies and mammoplasties.
- Mammogram history.
- History of oral contraceptive and/or hormone replacement therapy.
- Personal and family history of breast and gynecologic cancer, including age at diagnosis.

2. Physical examination
3. Imaging

- Screening mammogram
- Diagnostic imaging:
- Diagnostic mammograms

- Ultrasonography.
- MRI

4. Breast biopsy

- Palpable masses:
  - FNACB.
  - Core needle biopsy.
  - Excisional biopsy.
  - Incisional biopsy.

- Nonpalpable masses:
  - Stereotactic core biopsy.
  - Ultrasound-guided biopsy.
  - NLB: needle or hookwire localized biopsy.

Staging

		Stage	Primary tumour (T)*	Regional lymph node status (L)	Distant metastasis (M)
T- Tumour		0	Tis	N0	M0
T1	Tumour ≤ 2 cm	I	T1	N0	M0
T2	Tumour ≥ 2 cm but ≥ 5 cm		T0	N1	M0
T3	Tumour ≥ 5 cm	IIA	T1	N1	M0
T4	Tumour of any size with direct extension to chest wall or skin		T2	N0	M0
N- Lymph node		IIB	T2	N1	M0
N0	No cancer in regional node		T3	N0	M0
N1	Regional movable metastasis	III A	T0	N2	M0
N2	Non-movable regional metastases		T1	N2	M0
N3	Cancer in the internal mammary lymph nodes		T2	N2	M0
M- Metastasis			T3	N1/N2	M0
M0	No distant metastases	III B	T4	Any N	M0
M1	Distant metastases	III C	Any T	N3	M0
		IV	Any T	Any N	M1

Criteria for staging breast tumours according to the UICC ICD-10 TNM classification.

*Size measurements are for the tumour's greatest dimension.

Tumor Biomarkers and Prognostic Factors

1. Histological type.
2. Tumor grade.
3. Estrogen receptor (ER) & (PR).
4. HER2 receptor (IHC or FISH).
5. Proliferation marker (Ki67).

Definitions of intrinsic subtypes of breast cancer according to: The 2013 St Gallen Consensus Conference and The ESMO Clinical Practice Guidelines	
Luminal A	'Luminal A-like' • ER-positive • HER2-negative • Ki67 low • PgR high
Luminal B	'Luminal B-like (HER2-negative)' • ER-positive • HER2-negative • and either • Ki67 high or • PgR low 'Luminal B-like (HER2-positive)' • ER-positive • HER2-positive • any Ki67 • any PgR
HER2 overexpression	'HER2-positive (nonluminal)' • HER2-positive • ER and PgR absent
'Basal-like'	'Triple-negative (ductal)' • ER and PgR absent • HER2-negative

Multidisciplinary Evaluation

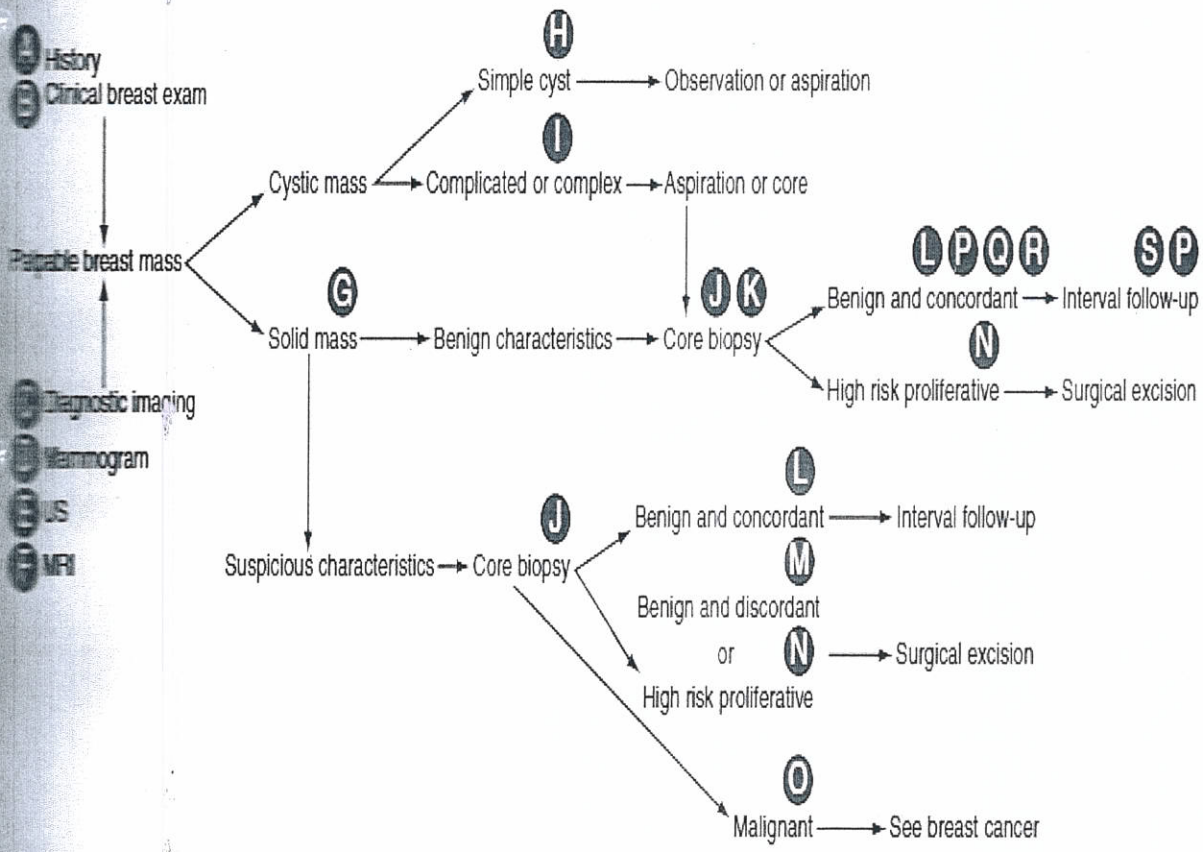
- Surgical oncologist, Medical oncologist and radiation oncologist
- Plastic and reconstructive surgeons

To delinate:

- Choice of surgery
- Systemic therapy
- Radiation options
- Reconstructive choice

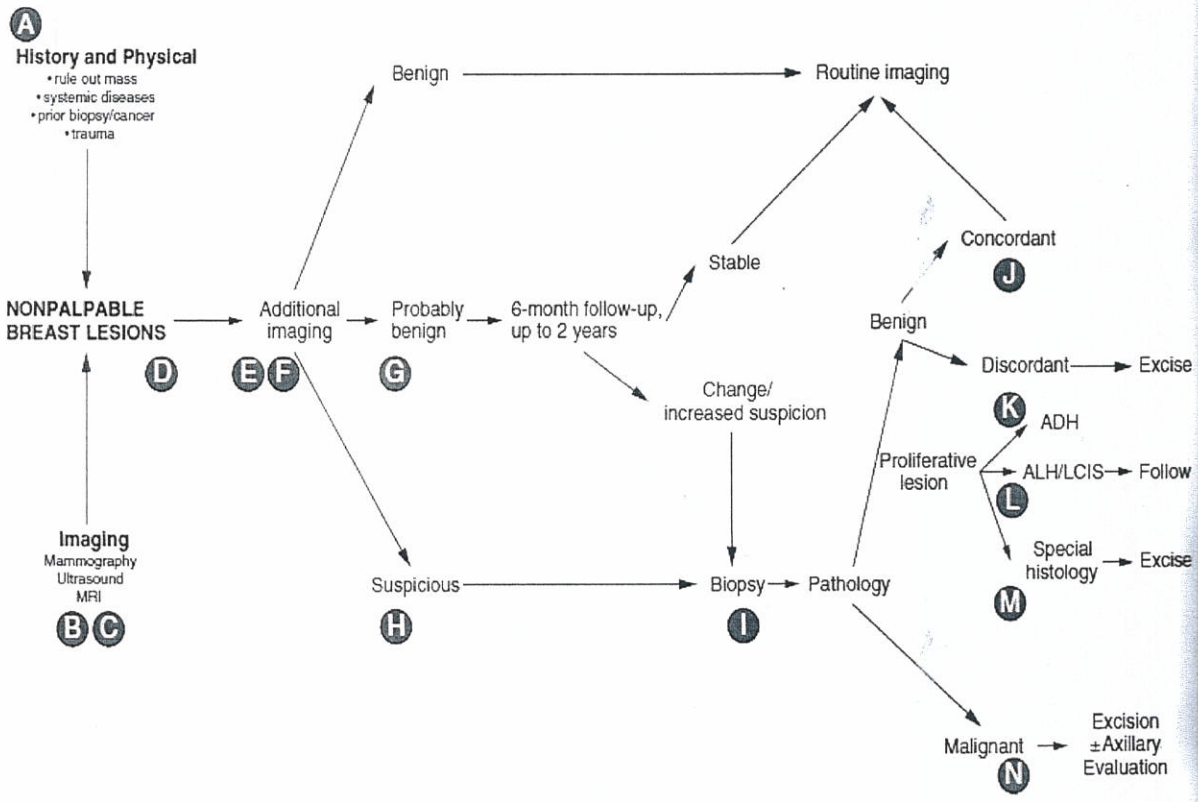
Treatment Recommendations and Considerations

Management of Palpable Breast Mass

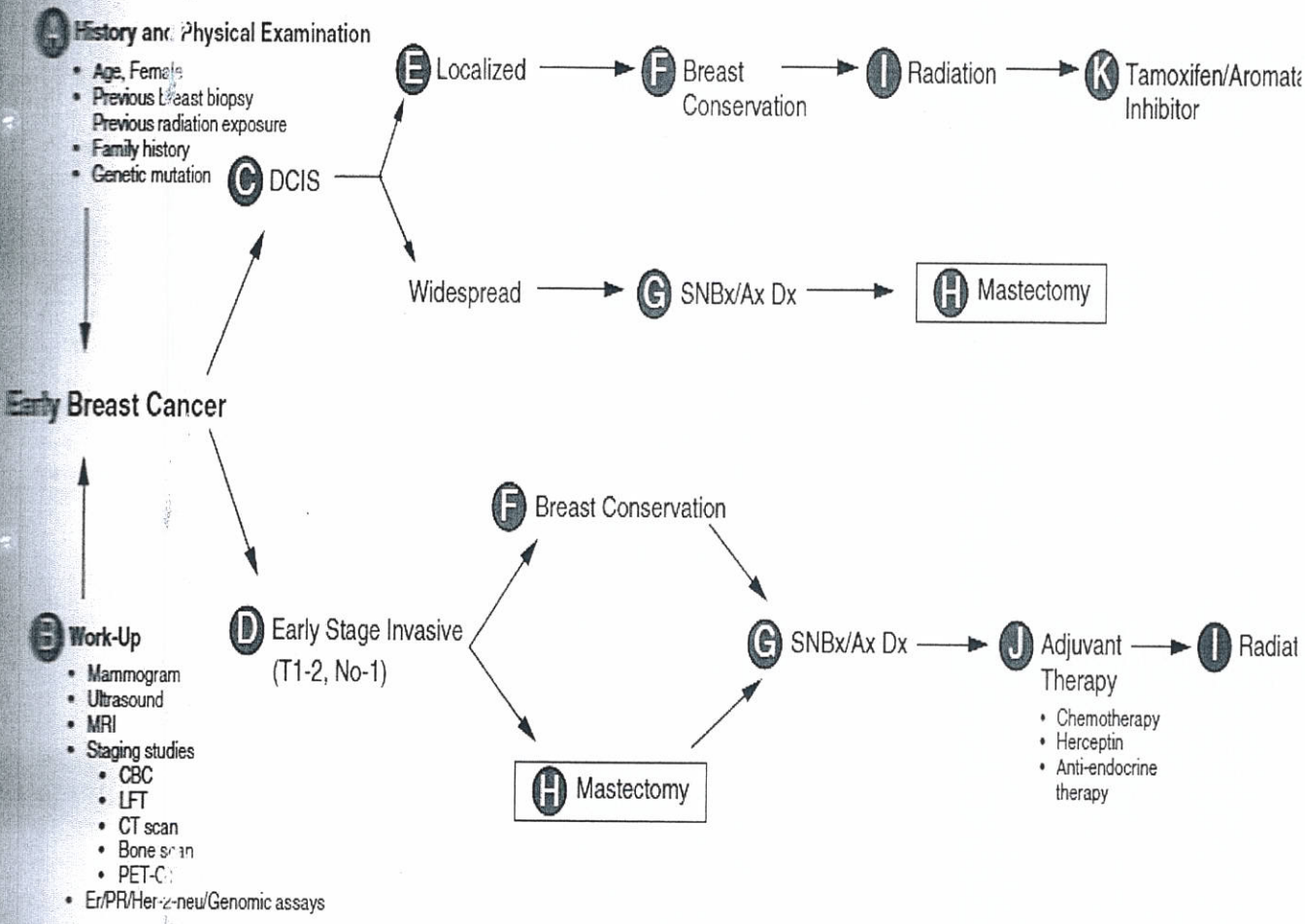


Procedures[4]

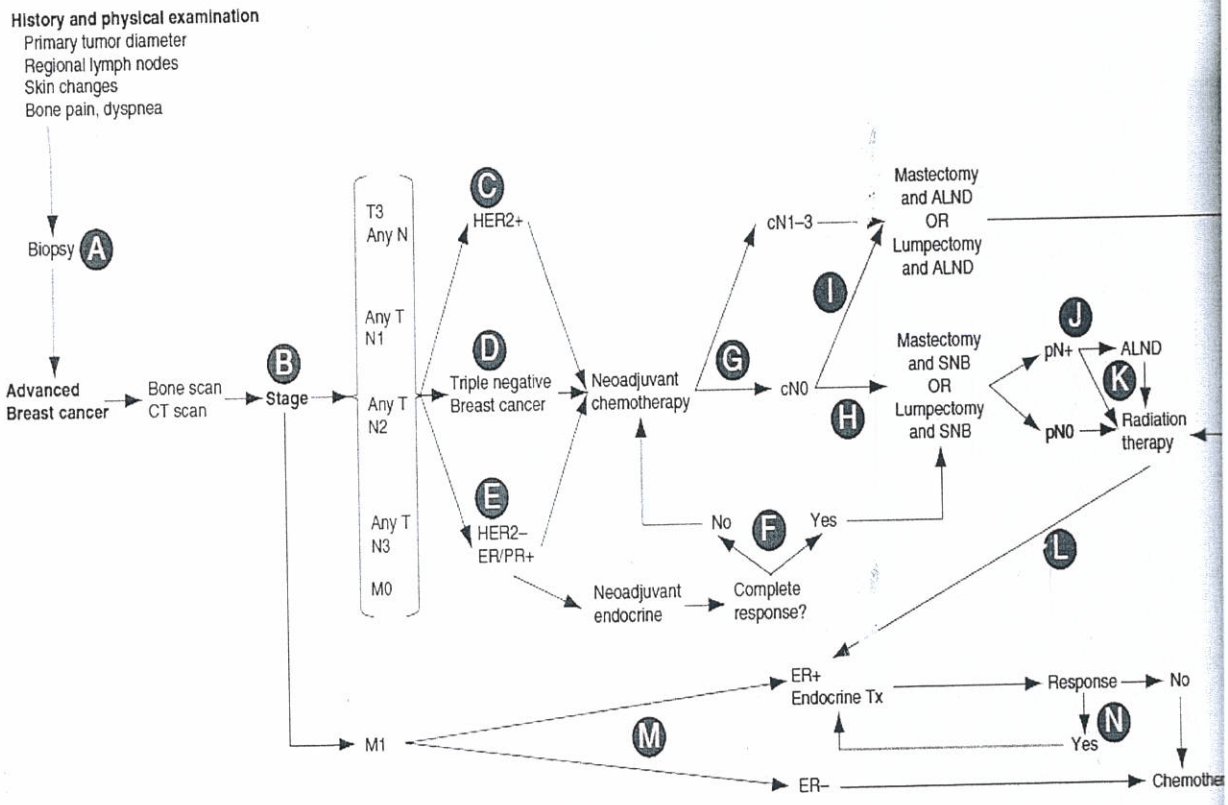
Management of Non-palpable Breast Mass



Management of Early Breast Cancer



Management of Advanced Breast Cancer



Surgery

1. Breast Conservative surgery

- Should be done in specialized center with well-trained team, and in the presence of frozen section facilities.
- Greater emphasis is now placed on achieving acceptable cosmosis.
- A careful histological assessment of resection margins is essential, with no tumor at the inked margin required and a minimum 1 mm margin preferred for the invasive component and >2 mm of normal tissue required for in situ disease.
- Absolute contra-indications:
  - Wide spread disease that cannot achieve negative margins with a satisfactory cosmetic result
  - Radiotherapy use during pregnancy
  - Diffuse suspicious or malignant appearing microcalcifications
  - Diffuse positive margins or positive margins after multiple excision
- Relative contra-indications:
  - Active connective tissue disease involving the skin
  - Large tumor to breast ratio
  - Prior radiation therapy to the chest wall or breast
  - Women with a known or suspected genetic predisposition to breast cancer, who may have an increased risk of ipsilateral breast cancer.

2. Modified Radical Mastectomy
3. Skin sparing mastectomy consists of total mastectomy with resection of the nipple-areola complex
4. Nipple sparing mastectomy
5. Management of the axilla
   a. Sentinel lymph node biopsy (SLNB) in:
      - Clinically node negative disease or
      - ≤ 2 suspicious nodes or
      - ≤ 2 positive LN ± clipping of nodes or
      - Clinically suspicious ≥ 3LN and negative core biopsy

   b. Axillary Sampling (LI + LII)

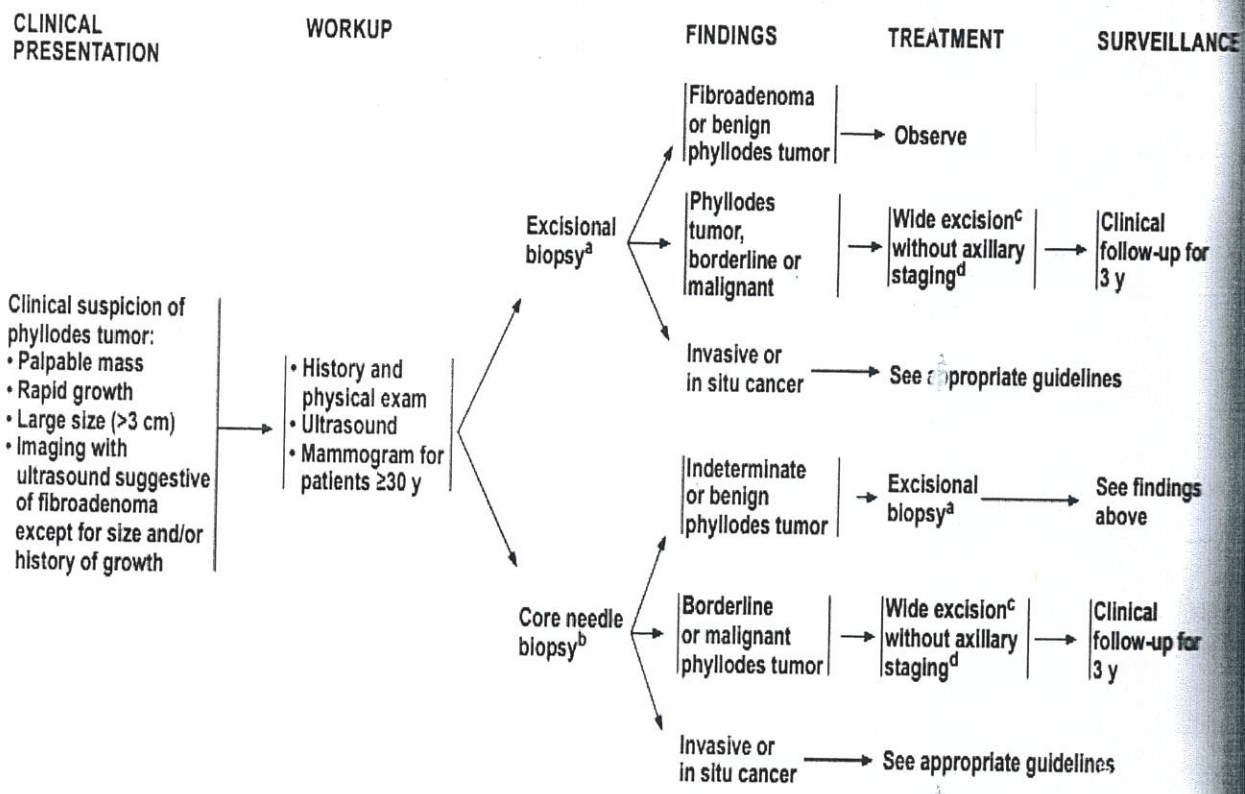
   c. Axillary Dissection (axillary clearance) when level III nodes are grossly or pathologically involved.

   - Only 1-3% of negative level I or II nodes show positive level III nodes
   - Level III dissections carry a higher risk of subsequent lymphodema

6. Breast reconstruction:
   a. Immediate vs delayed reconstruction
   b. Autologous tissue vs synthetic implants

Special situations;

I. Phyllodes tumor



[a]Excisional biopsy includes complete mass removal, but without the intent of obtaining surgical margins.

[b]FNA or core biopsy may not distinguish a fibroadenoma from a phyllodes tumor in some cases. The sensitivity of core biopsy for the diagnosis of phyllodes tumor is greater than that of FNA biopsy, but neither core biopsy nor FNA biopsy can always differentiate phyllodes tumors from fibroadenomas. In cases with clinical suspicion for phyllodes tumor, excision of the lesion may be needed for definitive pathologic classification.

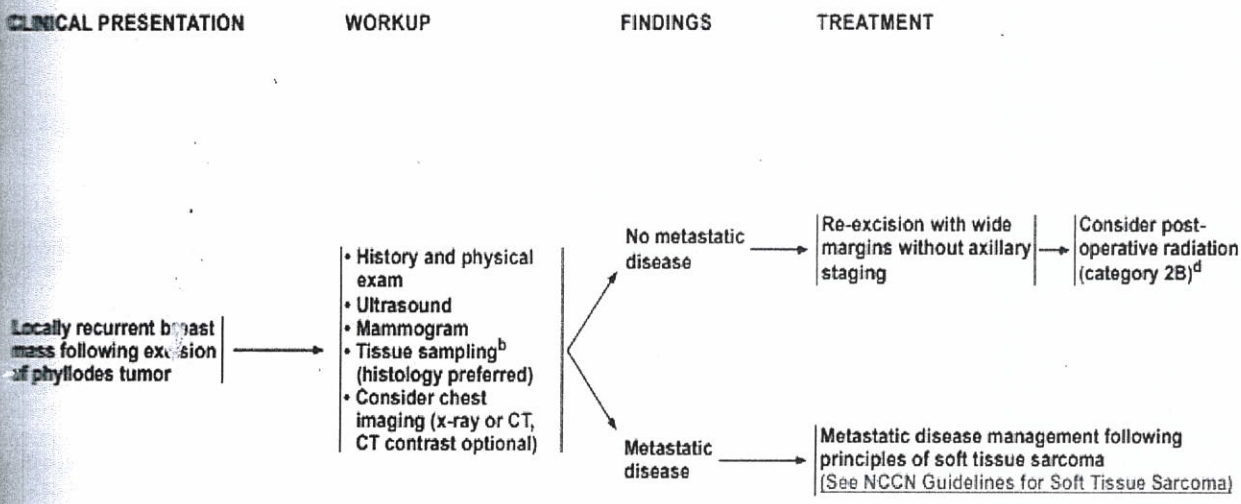
[c]For malignant or borderline disease, wide excision means excision with the intention of obtaining surgical margins ≥1 cm. Narrow surgical margins are associated with heightened local recurrence risk, but are not an absolute indication for mastectomy when partial mastectomy fails to achieve margin width ≥1 cm.

[d]There are no prospective randomized data supporting the use of radiation treatment with phyllodes tumors. However, in the setting where additional recurrence would create significant morbidity (eg, chest wall recurrence following mastectomy), RT may be considered following the same principles that are applied to the treatment of soft tissue sarcoma.

Note: All recommendations are category 2A unless otherwise indicated.
Clinical Trials: NCCN believes that the best management of any patient with cancer is in a clinical trial. Participation in clinical trials is especially encouraged.

PHYLL-1

PHYLLODES TUMOR RECURRENCE



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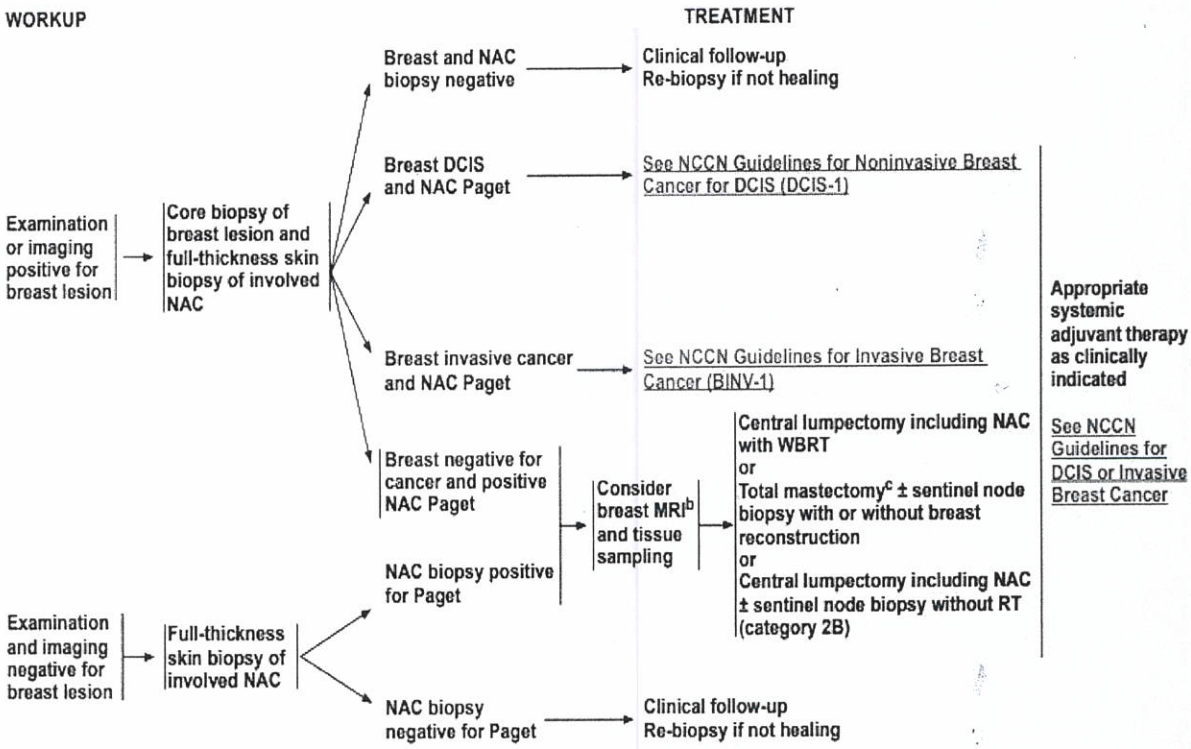
II. Paget Disease



[b] See Principles of Dedicated Breast MRI Testing (BINV-B).

[c] Mastectomy is always an option with any manifestation of Paget disease (See Discussion).

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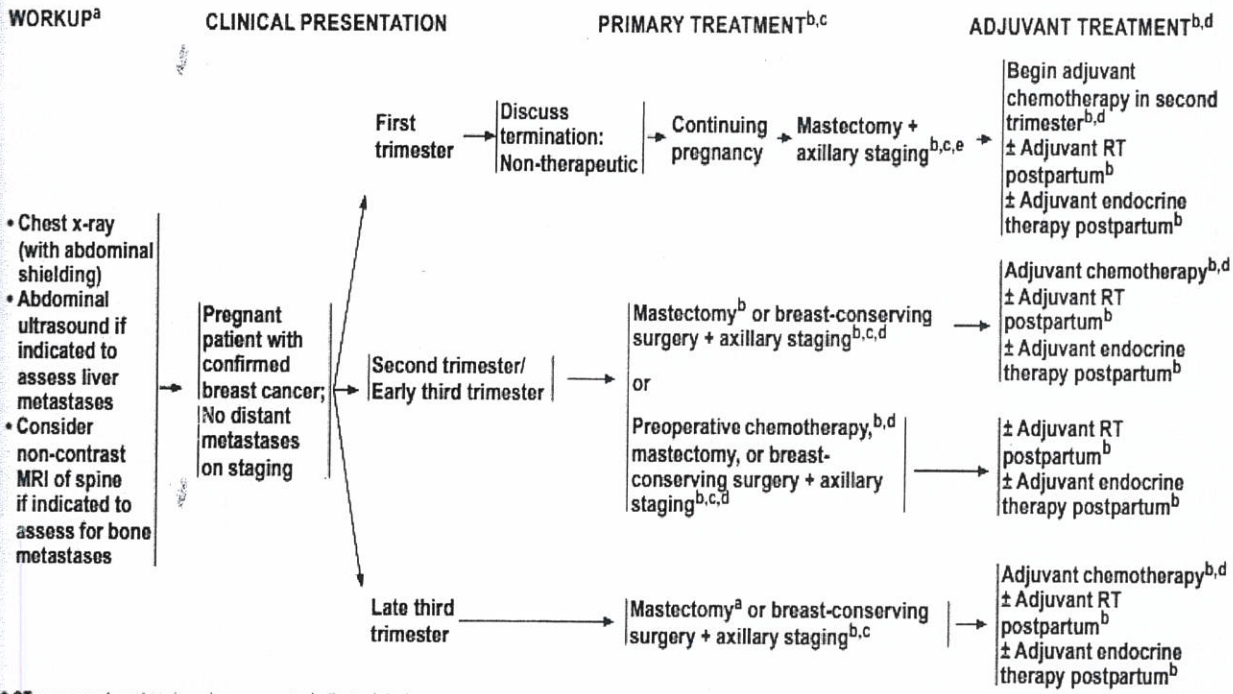
PAGET-2

III. Breast Cancer during Pregnancy



[a] CT scans and nuclear imaging are contraindicated during pregnancy.

[b] Considerations and selection of optimal local therapy and systemic therapy are similar to that recommended in non–pregnancy-associated breast cancer; see other sections of this guideline. However, the selection and timing of chemotherapy, endocrine therapy, and RT is different in the pregnant versus non-pregnant patient (See Discussion). Chemotherapy should not be administered during the first trimester of pregnancy, and RT should not be administered during any trimester of pregnancy. Coordination is recommended between the oncology and obstetrics teams to plan the optimal timing of systemic therapy administration during pregnancy. Most experience with chemotherapy during pregnancy for breast cancer is from regimens that utilize various combinations of doxorubicin, cyclophosphamide, and fluorouracil. Considerations for postpartum chemotherapy are the same as for non–pregnancy-associated breast cancer.

[c] Use of blue dye is contraindicated in pregnancy; radiolabeled sulfur colloid appears to be safe for sentinel node biopsy in pregnancy. See Surgical Axillary Staging (BINV-D).

[d] There are limited data on the use of taxanes during pregnancy. If used, the NCCN Panel recommends weekly administration of paclitaxel after the first trimester if clinically indicated by disease status. The use of anti-HER2 therapy is contraindicated during pregnancy.

[e] If late first trimester, may consider preoperative chemotherapy in the second trimester.

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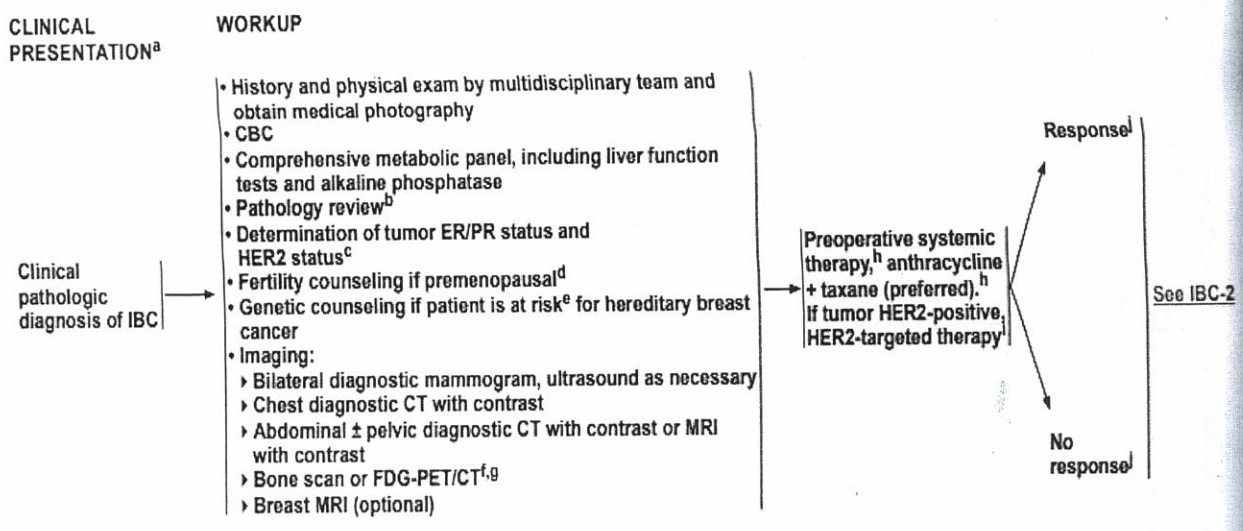
PREG-1

IV. Inflammatory breast cancer



[a] IBC is a clinical syndrome in patients with invasive breast cancer that is characterized by erythema and edema (peau d'orange) of a third or more of the skin of the breast. The differential diagnosis includes cellulitis of the breast or mastitis. Pathologically, a tumor is typically present in the dermal lymphatics of the involved skin, but dermal lymphatic involvement is neither required, nor sufficient by itself for a diagnosis of IBC.

[b] The panel endorses the College of American Pathologists Protocol for pathology reporting for all invasive and noninvasive carcinomas of the breast. http://www.cap.org.

[c] See Principles of Biomarker Testing (BINV-A).

[d] See Fertility and Birth Control (BINV-C).

[e] For risk criteria, see NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast,Ovarian, and Pancreatic.

[f] If FDG PET/CT is performed and clearly indicates bone metastasis on both the PET and CT component, bone scan or sodium fluoride PET/CT may not be needed.

[g] FDG PET/CT can be performed at the same time as diagnostic CT. FDG PET/CT is most helpful in situations where standard staging studies are equivocal or suspicious. FDG PET/CT may also be helpful in identifying unsuspected regional nodal disease and/or distant metastases when used in addition to standard staging studies.

[h] See Preoperative/Adjuvant Therapy Regimens (BINV-L).

[i] A pertuzumab-containing regimen may be administered preoperatively to patients with HER2-positive IBC.

[j] The accurate assessment of in-breast tumor or regional lymph node response to preoperative systemic therapy is difficult, and should include physical examination and performance of imaging studies (mammogram and/or breast MRI) that were abnormal at the time of initial tumor staging. Selection of imaging methods prior to surgery should be determined by the multidisciplinary team.

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Perioperative Antibiotic Therapy

- Single dose of preoperative broad – spectrum antibiotic and another dose postoperatively in uncomplicated appendicitis.[3]
- Postoperative antibiotics are used in complicated appendicitis.[1,3]

Surgery

- Laparoscopic appendectomy offers significant advantages over open appendectomy (Either technique can be used).[3]
- Peritoneal irrigation does not have any advantage over drainage in complicated appendicitis.[4]
- The use of drains after appendectomy should be discouraged.[4]

Management of Perforated Appendicitis

- Non-operative management and/or percutaneous drainage can be the first line.[4]
- Operative management is a safe alternative.[4]

Postoperative Care

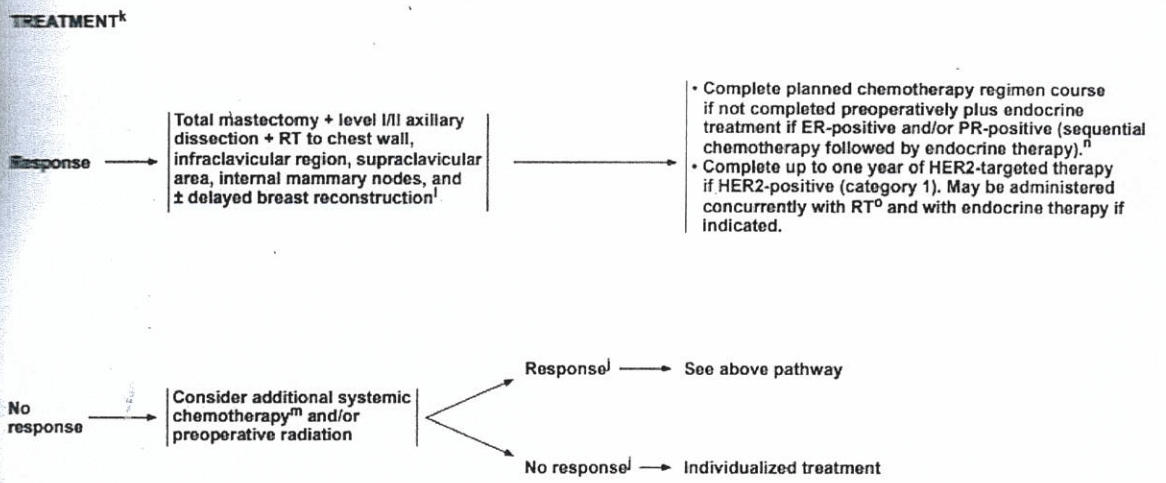
The postoperative stage for uncomplicated cases is usually uneventful. As mentioned earlier, the use of antibiotics is warranted in in complicated cases in post-operative setting. Wound care is essential to avoid infection.[1]

- Appendectomy remains the only curative treatment of appendicitis, but management of patients with an appendiceal mass can usually be divided into the following 3 treatment categories:

- Patients with a phlegmon or a small abscess: After intravenous (IV) antibiotic therapy, an interval appendectomy can be performed 4-6 weeks later.

- Patients with a larger well-defined abscess: After percutaneous drainage with IV antibiotics is performed, the patient can be discharged with the catheter in place. Interval appendectomy can be performed after the fistula is closed.

- Patients with a multi compartmental abscess: These patients require early surgical drainage.



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[k] Patients with recurrent IBC should be treated according to the guideline for recurrence/stage IV (M1) disease (BINV-19).

[l] See Principles of Breast Reconstruction Following Surgery (BINV-H).

[m] See Systemic Therapy Regimens for Recurrent Unresectable (local or regional) or Stage IV (M1) Disease (BINV-Q).

[n] See Adjuvant Endocrine Therapy (BINV-K).

[o] See Principles of Radiation Therapy (BINV-I).

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IBC-2

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Reference:

1- Breast Cancer. NCCN.org. https://www.nccn.org/professionals/physician_gls/pdf/breast.pdf. Published 2021. Accessed August 28, 2021.

(i) Chapter 8: Guidelines for the Assessment and Management of Acute Appendicitis

Overview

Definition of Appendicitis

It is an inflammatory condition affecting vermiform appendix. It typically presents as abdominal pain that localizes to the right lower quadrant of the abdomen. It usually has an acute presentation.[1] Appendicitis is more common in males than in females with a lifetime prevalence of 8.6% in the former and 6.7 % in the latter.[1,2]

Diagnosis Recommendations[1]

- Clinical diagnosis of acute appendicitis is challenging – clinical scores can help to exclude appendicitis.
- Biochemical markers, white blood count and CRP are useful laboratory tests.
- Combination of U/S and clinical examination can replace the need of CT scan.
- MRI is limited for some cases (pregnant).

Differential Diagnosis

Comprehensive medical history and thorough physical examination are warranted to exclude other causes. Some of the other condition that might have similar presentation include Cohn's disease, pelvic inflammatory disease, ectopic pregnancy, renal stones, gastroenteritis, and other medical conditions.[1]

Treatment Recommendations and Considerations

Non-operative Treatment

Antibiotics: First strategy can be used in some cases of uncomplicated appendicitis especially in children and pregnant females.[2]

Considerations Related to Timing of Appendectomy and In-hospital Delay

- 24 hours is safe in uncomplicated acute appendicitis.1
- Early appendectomy for complicated acute appendicitis.[3]

References

1- Jones MW, Lopez RA, Deppen JG. Appendicitis. [Updated 2021 Aug 6]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK493193/

2- Snyder MJ, Guthrie M, Cagle S. Acute Appendicitis: Efficient Diagnosis and Management. *Am Fam Physician*. 2018;98(1):25-33.

3- Becker P, Fichtner-Feigl S, Schilling D. Clinical Management of Appendicitis. Visc Med. 2018;34(6):453-458. doi:10.1159/000494883

4- Di Saverio S, Podda M, De Simone B, et al. Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. World J Emerg Surg. 2020;15(1):27. Published 2020 Apr 15. doi:10.1186/s13017-020-00306-3

(ii) Chapter 9: Guidelines for the Assessment and Management of GERD

Overview

GERD is a dilemmatic disease; the dilemma is in the diagnosis and management. The diagnosis is a problem as atypical presentation is uncommon with many patients. A lot of atypical GERD symptoms hide behind them another grave problem. The management usually needs selective experience from the physicians in order to choose the suitable modality of investigation to each particular patient.[1]

Usually there is a huge debate between gastroenterologists and surgeons on who should be managing GERD patients, as from a surgical point of view the delay in taking the decision of the surgery will harbor a lot of complications, yet on the other hand gastroenterologists believes that improper selection of patients will lead to failure of surgery, making the patients' conditions worse.[2]

In fact, GERD is disease which needs an intimate collaboration between surgeons, gastroenterologists and endoscopists.[3]

These guidelines will review the different diagnostic modalities and the recommendation of use; and the effective treatment whether medical or surgical will be addressed according to the patient's presentation, existence of any risk factors, and the possibilities of any other hidden causes of symptoms.

Diagnosis Recommendations

1- Reaching an accurate diagnosis could be based on the presence typical symptoms such as heart burn and regurgitation, which resolve with the initial trial of proton pump inhibitor (PPI). Therefore, diagnosis could be reached without the need of upper GI endoscopy.
2- Upper GI endoscopy is recommended in:
   i- Refractory symptoms, with proton pump inhibitor (PPI) stopped prior to the procedure
   ii- The presence of alarming symptoms such as dysphagia, anemia, weight loss, bleeding and recurrent vomiting.
   iii- Follow up for Barrett's esophagus and when new symptoms develop.
   iv- Endoscopic biopsy is indicated when eosinophilic esophagitis, Barrett's esophagus, scleroderma or other pathology is suspected.

3- When heart burn and lower chest pain exist, cardiac causes should be excluded.
4- Manometry is strongly recommended prior to surgery as it will verify the motility, the effectiveness of the peristaltic wave of the esophagus and the pressure at the lower esophageal sphincter giving a clearer expectation to the outcome of the operation.
5- 24-hour PH monitoring is recommended in:
    i- Patients with refractory response to proton pump inhibitor (PPI).
    ii- Patients where diagnosis of GERD is uncertain.
    iii- Patients with atypical symptoms and negative upper GI endoscopic findings.

Differential Diagnosis

Differential diagnosis involves coronary artery disease (CAD), achalasia, eosinophilic esophagitis, dyspepsia, gastroparesis, peptic ulcer disease, neoplasm of the stomach and esophagus, and rumination syndrome.[4]

Treatment Recommendations and Considerations

Treatment should go in three avenues

1- Lifestyle Modifications
    i- Weight loss is recommended for obese patients with GERD and for patients with recent increase in weight.
    ii- Sleep position: sleeping in the left lateral position or supine with bed elevation is effective in patients with nocturnal GERD.
    iii- Head elevation in bed and avoid immediate meals before bedtime.
    iv- Cessation of smoking, alcohol, spicy food and avoid late meal intake at night may minimize nocturnal GERD.
    v- Lifestyle modification is applied with drug therapy.
2- Drug therapy

Proton Pump Inhibitor (PPI)

i- An 8-week course of proton pump inhibitor (PPI) once a day before the first meal is a good diagnostic and therapeutic test.
ii- In patients with partial response to proton pump inhibitor (PPI) doubling the dose or switching to another proton pump inhibitor (PPI) or combining the morning dose of PPI with H2 blocker before bedtime might be required.

iii- Non-responders to proton pump inhibitor should be investigated and re-evaluated.

iv- Patients who need proton pump inhibitor (PPI) continuously should be counselled for surgical treatment especially if symptoms persist after stopping the proton pump inhibitor (PPI).

v- Limiting factors for using proton pump inhibitor (PPI)

- Chronic kidney disease.
- Dementia.
- Bone disease (e.g. osteoporosis).
- Patient susceptible to spontaneous bacterial peritonitis, clostridium difficile and pneumonia.

vi- Patients refractory to treatment with proton pump inhibitor (PPI)

- Upper GI endoscopy should be performed to exclude non-GERD cases.
- Esophageal PH monitoring and impedance test to determine if there is persistent acidic or non-acidic reflux.
- Patients who need selective pain modulator and pain therapy.
- Patients with non-acid reflux may benefit from baclofen intake (decrease lower esophageal sphincter relaxation time)

H2 Blocker

i- As a maintenance option in patient without erosive esophagitis.

ii- Could be added to proton pump inhibitor (PPI) in patients with nocturnal symptoms as a night dose but tachyphylaxis may happen after several weeks.

Antacids

i- Effective in reducing postprandial esophageal exposure.

Prokinetic Therapy

i- Is used in conjunction with PPI to improve esophageal moletely and gastric emptying and incense LES pressure

3- Surgery

i- Recommended for all long term therapy in GERD patients.

ii- Patient's choice should be considered before surgery through explaining the functional outcome of the operation and the sequelae of such procedure, especially in patients with short term therapy, patient not responding medical treatment and patients with atypical symptoms.

iii- Failed medical treatment:

- Moderate to severe gastroesophageal reflux disease incompletely controlled by medical therapy.
- Refractory symptoms after doubling the dose of proton pump inhibitor (PPI) for over 3 months should make a mark that there are other causes than reflux to searched for, such as reflux hypersensitivity, functional heart burn, malignancy and extra-esophageal disease.
- Manometry and 24-hour Ph metry are mandatory in this group of patients, as they are not fit for surgical intervention if their lower esophageal sphincter (LES) pressure is low and their acid exposure is not pronounced.
- Intolerance and noncompliance to medical treatment: Inspite the fact that proton pump inhibitor (PPI) are successful in managing GERD patients, the idea of putting the patients on a lifelong regime of (PPI) might raise the chances of non-compliance and intolerance. These patients must be subjected to medical counseling prior to surgery, explaining the sequalae of each surgical procedure.

Considerations

- Patients who do not respond to medical treatment should not be subjected to surgery unless other causes other than GERD are excluded, 24-hour PH manometry and full explanation of the outcome of the procedure with consenting of the patient.
- Patients with non-erosive reflux proven by upper GI endoscopy should perform 24-hour Ph manometry before surgical procedure.
- Pre-operative manometry should be done to all patients prior to surgery to rule out achalasia, scleroderma and ineffective esophageal peristalsis.
- Obese patients contemplating surgical treatment for GERD should be subjected to gastric bypass.
- Surgery for complications:
  - i- Patients with severe esophagitis are recommended for surgery.
  - ii- Patients with benign stricture should have anti-reflux surgery after endoscopic dilatation.
  - iii- Barrett's esophagus patient will benefit from anti-reflux surgery combined with sub-mucosal endoscopic resection.

Choice of Procedure

Choice of procedure based on:

- Surgeon's preference and experience.
- Motility status of the esophagus.
- Presence of complications.
- Length of the esophagus.
- Morbid obesity.

1- Early and uncomplicated cases

Normal esophageal length and motility Nissen Fundoplication or one facts modification (according to surgeons preference) are standard surgical procedures.

2- Patients with impaired esophageal motility partial fundoplication should be performed, but patients with effective peristaltic waves less than 30% should be informed that the results of the operation is very limited.

3- Short esophagus

Patients with shortened esophagus from chronic inflammation, Collis gastroplasty are the treatment of choice.

4- Patients with atypical symptoms

ENT Surgeon and chest physician should be counseled.

i- Patients whose respiratory symptoms are associated with typical reflux symptoms and their 24-hour Ph metry test is positive, may benefit from anti-reflux surgery.

ii- Patients with respiratory symptoms, GERD and their motility study is showing abnormal esophageal motility responds poorly to anti-reflux surgery.

iii- Anti-reflux surgery is not routinely recommended to patients with chronic laryngitis, except if double probe study PH metry was done showing abnormal laryngeal acid exposure and failed medical treatment.

iv- Anti-reflux surgery may improve asthma symptoms, asthma medication use and pulmonary functions in 70% of patients, as well as decreasing the dependency on steroids, but diagnosis should be confirmed by 24 hour PH metry and pulmonologist should have the upper hand in the management plan.

(ii) Chapter 10: Guidelines for Bariatric Surgery

Overview

It is a procedure undertaken to achieve weight loss by means of a surgical operation.[1]

Patient Selection Criteria[2]

- BMI > 40 kg/m2 (level II, grade A).
- Adolescent bariatric surgery (age < 18 years) has been proven effective but should be performed in a specialty center (level II, grade B). Patient selection criteria should be the same as used for adult bariatric surgery (level II, grade C).
- Individuals with BMI 30-35 kg/m2 may benefit from laparoscopic bariatric surgery (level I, grade B).

Treatment Recommendations and Considerations

Surgery

- Bariatric surgery programs should include multidisciplinary providers with appropriate training and experience (level III, grade C).2
- Institutions must accommodate the special needs of bariatric patients and their providers (level III, grade C).2
- Participation in support groups may improve outcomes after bariatric surgery (level II, grade B).2

Preoperative Preparation[2]

- A psychological evaluation is commonly part of the preoperative work-up of bariatric patients (level III, grade C).
- Treated psychopathology does not preclude the benefits of bariatric surgery (level II, grade B).
- Preoperative weight loss may be useful to reduce liver volume and improve access for laparoscopic bariatric procedures (level II, grade B), but mandated preoperative weight loss does not affect postoperative weight loss or comorbidity improvements (level I, grade B).

Laparoscopic BPD ± DS[2]

- In BPD, the common channel should be 60-100 cm, and the alimentary limb 200-360 cm (level II, grade C).
- DS diminishes the most severe complications of BPD, including dumping syndrome and peptic ulceration of the anastomosis (level II, grade C).
- BPD is effective in all BMI>35 kg/m2 subgroups, with durable weight loss and control of co-morbidities beyond 5 years (level II, grade A).
- Laparoscopic BPD provides equivalent weight loss, shorter hospital stay, and fewer complications than open BPD (level III, grade C).
- BPD may result in greater weight loss (level II, grade A) and resolution of comorbidities (level II, grade B) than other bariatric surgeries, but with the highest mortality rate (level II, grade A).
- After BPD ± DS, close nutritional surveillance and supplementation are needed (level III, grade C).

Revisional Bariatric Surgery[2]

- Prior to elective procedures, anatomy should be defined by review of available records, plus radiographic and/or endoscopic assessment (level II, grade B).
- Laparoscopic revisional procedures may be performed safely, but with more complications than primary bariatric procedures, therefore the relative risks and benefits of laparoscopy should be considered on a case-by-case basis (level III, grade C).

Procedures Consensus

Mini Gastric Bypass[3]

- One anastomosis/mini gastric bypass (OAGB/MGB) largely works similar to an RYGB in its mechanism of action (65.35% disagreed).
- OAGB/MGB is an acceptable surgical option for suitable patients with severe gastro-esophageal reflux disease (GERD) requiring daily medication (69.31% agreed).
- OAGB/MGB is the preferred surgical option for suitable patients with severe psychiatric disorders because of the ease of reversibility (54.46% agreed).
- OAGB/MGB is not recommended for patients with Barrett's esophagus (66.34% agreed).
- Routine crural approximation is unnecessary for patients with a hiatus hernia (63.37% agreed).
- Patients should be advised routine prophylaxis for gallstones with ursodeoxycholic acid for at least 6 months (64.36% disagreed).
- Patients developing symptomatic GERD unresponsive to maximal medical therapy after OAGB/MGB can be offered surgical correction in the form of a Braun's anastomosis between afferent and efferent limbs (66.34% disagreed).

Sleeve Gastrectomy[4]

Key consensus points at a gla ce

Category	Topic	Consensus statement	Consensus (%)
I/C	Patient selection	LSG is a valid stand-alone procedure	90
		LSG is a valid option for patients considered high risk	96
		LSG is a valid option for transplant candidates (kidney and liver).	96
		LSG is a valid option for morbidly obese patients with metabolic syndrome	91
		LSG is a valid option in patients with BMI 30–35 kg/m^2 with associated co-morbidities	95
		LSG is a valid option for patients with inflammatory bowel disease	86
		LSG is valid for adolescent morbidly obese patients	77
		LSG is valid for elderly morbidly obese patients	100
		Barrett's esophagus is an absolute contraindication for LSG	81
Technique	Sizing sleeve	Optimal bougie size is 32–36F	87
		Invaginating staple line reduces lumen size	83
	Staple height	It is not appropriate to use staples with closed height less than that of a blue load (1.5 mm) on any part of sleeve gastrectomy	81
		When using buttressing materials, surgeon should never use any staple with closed height less than that of a green load (2.0 mm)	79
		When resecting the antrum, surgeon should never use any staple with closed height less than that of a green load (2.0 mm)	87
	First firing	Transection should begin 2–6 cm from pylorus	92
	Last firing	It is important to stay away from GE junction on last firing	96
	Mobilization	It is important to completely mobilize the fundus before transection	96
	Reinforcement	Staple line reinforcement will reduce bleeding along staple line	100
Complications	Managing	A chronic leak is a leak that has lasted >12 wk	72
		Leaks can be classified as acute, early, late, and chronic	73
		In a patient in whom endoscopic dilation has failed for 6 wk, reoperation is indicated	80
		Gastric bypass is always the last treatment option for leaks	83
		A patient with uncontained, symptomatic leak requires immediate reoperation	86
		Roux-en-Y reconstruction is treatment of choice after failed reinterventions for chronic stricture	88
		Early leaks are those observed 1–6 weeks from primary procedure	89
		Stenting has limited utility for chronic leaks	89
		Patients with fever and tachycardia with normal UGI or other studies require immediate reoperation or reintervention	90
		Roux-en-Y reconstruction is a valid option in proximal chronic leaks	90
		The use of a stent for an acute proximal leak is a valid treatment option	93
		The surgeon should wait ≥12 wk of conservative therapy before reoperating to convert or revise proximal leak (assumes patient is stable)	94
		Staple line disruptions can be classified as proximal or distal and they behave differently	95
		Staple line disruptions can be divided into early and late	95
		The use of a stent is a valid treatment for an acute proximal leak that has failed conservative therapy	95
		Staple line disruptions can be classified as proximal or distal.	100
		Staple line disruptions behave differently based on anatomic location	100
		Acute leaks are those observed within 7 d of primary procedure	100
		Late leaks are those observed after 6 wk	100
		Early strictures are symptomatic in first 6 weeks after surgery	100
		The smaller the bougie size, the tighter the sleeve, the greater the stricture rate	78
	Avoiding	The smaller the bougie size, the tighter the sleeve, the greater the incidence of leaks	70
		When oversewing, the surgeon should always oversew with the bougie in place	78
		Maintaining symmetric lateral traction while stapling will reduce the potential for strictures	75
Special considerations	Hiatal hernia	Aggressive identification of hiatal hernia intraoperatively is appropriate	83
		Diaphragmatic defect should be closed after sleeve procedure is completed	71
	Postoperative diet	Patients should not begin eating solid food until ≥2 wk postoperatively	100

I/C = indications/contraindications; LSG = laparoscopic sleeve gastrectomy; BMI = body mass index; GE = gastroesophageal; UGI = upper gastrointestinal.

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(ii) Chapter 11: Guidelines for the Management of Obstructive Jaundice

Overview

Definition of Jaundice

This condition is also known as hyperbilirubinemia, which is characterized by yellowish discoloration of skin, sclera, mucous membrane of human body due to elevated level of serum bilirubin. This condition occurs either due to increased bilirubin production or impaired execretuion.[1,2]

Obstructive Jaundice

Is the type of jaundice caused by a defect in bilirubin excretion caused by bile duct obstruction, which impairs bile flow from the liver to the intestine.[3]

Causes of Obstructive Jaundice[2-4]

Complete Obstruction

- Tumors of the head of the pancreas
- Common bile duct ligation
- Cholangiocarcinoma
- Gallbladder cancer

Intermittent Obstruction

- Choledocholithiasis
- Ampullary tumors
- Choledochal cyst
- Others: Biliary parasites, haemobilia

Segmental Obstruction

- Traumatic
- Intrahepatic stones
- Sclerosing cholangitis
- Cholangiocarcinoma

Chronic Incomplete Obstruction

- Strictures of the common bile duct
- Congenital biliary atresia
- Traumatic (iatrogenic)
- Stenosis of biliary-enteric anastomosis
- Chronic pancreatitis
- Sphincter of Oddi stenosis

Sequalae of obstructive jaundice[3,5]

Biliary obstruction produces local effects on the bile ducts, which lead to derangements of hepatic function and, ultimately, to widespread systemic effects.

Chronic obstruction may lead to subsequent cirrhosis and chronic hepatic dysfunction.

Jaundiced patients may face increased risk for;

- Hepatic dysfunction,
- Renal failure,
- Cardiovascular impairments,
- Nutritional deficiencies, bleeding problems, infections, and wound complications,
- Eventually increased mortality and morbidity.

Cholangitis

Cholangitis can also be a serious sequela of biliary obstruction; the development of cholangitis requires the presence of three factors:

1- obstruction of bile flow,
2- colonization of the bile with bacteria (bactobilia), and
3- elevation of intraductal biliary pressure

Diagnosis Recommendations[1,2]

Diagnosis involves multiple domains:

- History and physical examination.
- Laboratory tests, such as liver function test, serum bilirubin, alkaline phosphatase, transaminases, albumin.
- Imaging techniques, such as ultrasound, computerized tomography, percutaneous transhepatic cholangiography among others and MRCP.

Differential Diagnosis

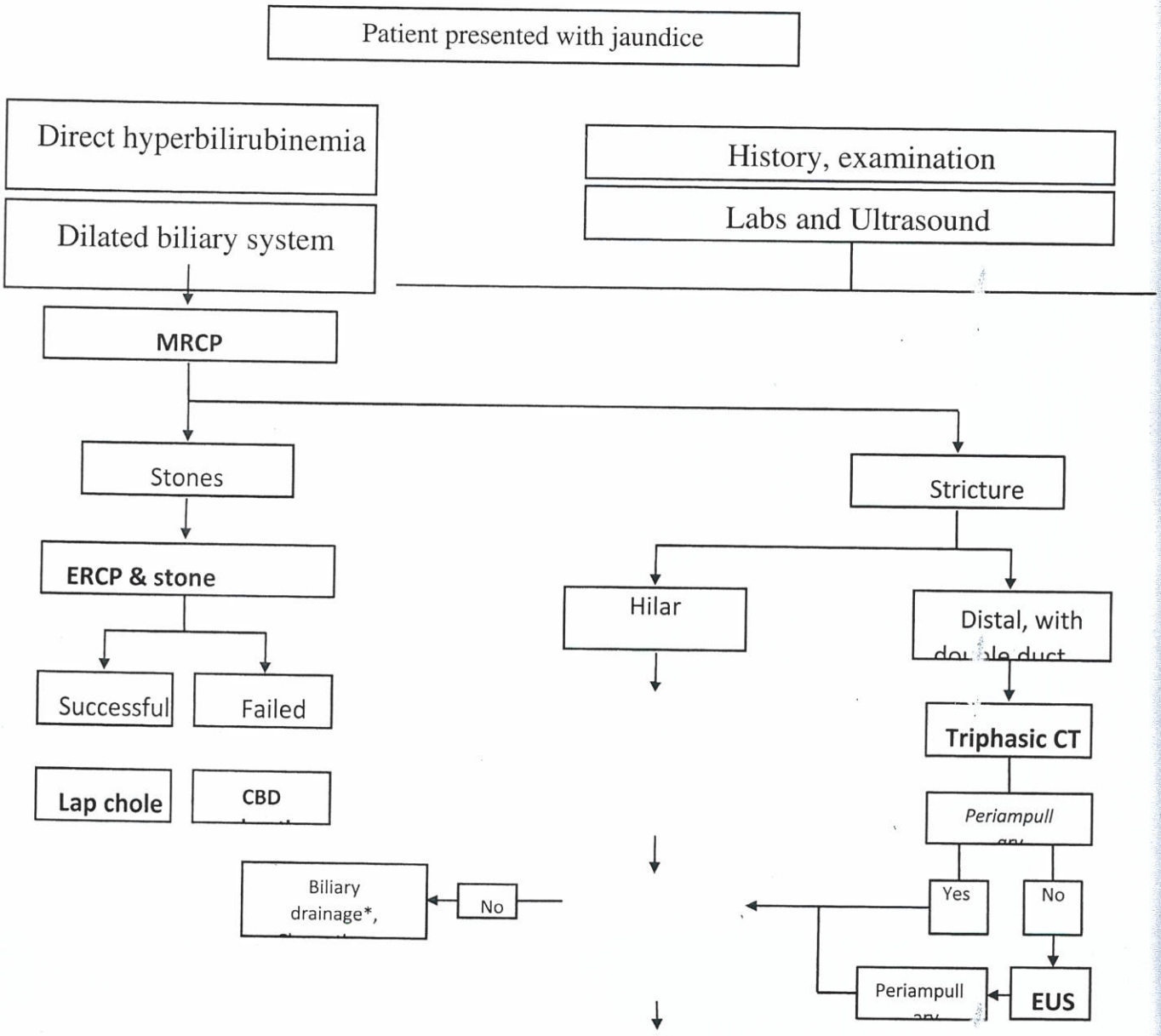
Differential diagnosis involves a range of benign and malignant conditions. A majority of these conditions have been listed under causes of obstructive jaundice section.[3]

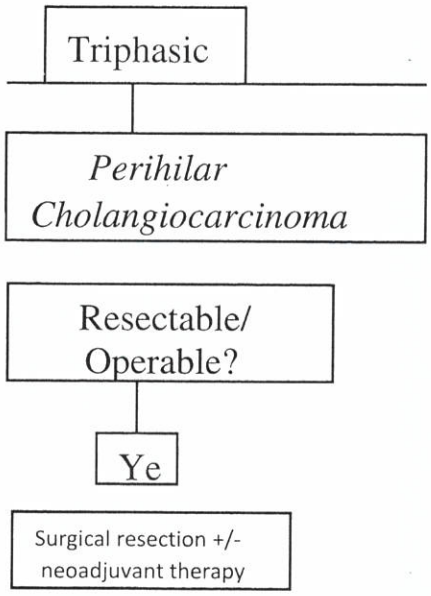
Treatment Recommendations and Considerations

Management of Cholangitis[6]

1- vigorous resuscitation and hemodynamic support,
2- broad-spectrum parenteral antibiotics, and
3- relief of biliary obstruction (decompression).

Management of Obstructive Jaundice





*: Drainage can be obtained endoscopically or percutaneously (transhepatic).

Drainage should be considered earlier at any level of management if the patient has complications (e.g. cholangitis, renal impairment ...etc.)

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(ii) Chapter 12: Guidelines for the Assessment and Management of Hemorrhoids

Overview

Hemorrhoids, also known as piles, is a condition that affects millions of people around the world. The condition results from enlargement and displacement of vascular anal cushions.[1,2]

Diagnosis Recommendations

Considerations[2]

- History
- Physical examination

Risk Factors[3]

Risk factors for the development of hemorrhoids include the following:

- Family history
- Sedentary lifestyle
- IBD
- Chronic diarrhea
- Obesity
- Surgery in the rectal area

Differential Diagnosis for Rectal Pain, Bleeding, or Mass[4]

Diagnosis	History	Physical Examination
Abscess	Gradual onset of pain	Tender fluctuant mass
Cancer	Pain, bleeding, changes in bowel movements, weight loss	Ulcerating, indurated lesion
Condyloma	Possible bleeding; anal intercourse	Verrucous lesions
Fissure	Tearing pain with bowel movements	Visible tender fissure
Fistula	Soiling, itching	Visible opening of fistula
Inflammatory bowel disease	Bloody diarrhea, abdominal pain, family history	Possible fistula; colitis on anoscopy
Polyps	Painless bleeding	Polyps on endoscopy
Proctalgia fugax	Painful rectum, no bleeding	Normal examination; diagnosis of exclusion
Proctitis	Painful rectum, bleeding	Tenderness on digital rectal examination
Rectal prolapse	Mass with Valsalva maneuver	Prolapse of rectal mucosa
Skin tags	History of hemorrhoids, no bleeding	Tags covered with normal skin

Treatment Recommendations and Considerations

Non-surgical[4]

- Increasing fiber intake is an effective first-line, non-surgical treatment for hemorrhoids.

Surgery[4]

- *Most patients who undergo excision of thrombosed hemorrhoids within two to three days of symptom onset achieve symptom relief.*
- Rubber band ligation is considered the preferred choice in the office-based treatment of grades I to III hemorrhoids because of effectiveness compared with other office-based procedures.
- Excisional (conventional) hemorrhoidectomy is effective for the treatment of grade III or IV, recurrent, or highly symptomatic hemorrhoids.
- The use of Ligasure during conventional hemorrhoidectomy leads to decreased pain in the immediate postoperative period.
- Compared with conventional hemorrhoidectomy, stapled hemorrhoidopexy results in more frequent recurrence of symptoms and prolapse.

- Hemorrhoidal artery ligation is an emerging therapy with early outcomes similar to conventional hemorrhoidectomy for grade II or III hemorrhoids.
- Diode laser treatment is used for all degrees, but with consideration including:[5]
  - Needs experience.
  - The energy delivered should not exceed 400J for each one.
  - It coagulates, shrink and fix the anal cushions or hemorrhoidal node.

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(iii) Chapter 13: Guidelines for the Management of Anal Fissures

Overview

Anal fissure, one of the most anorectal problems, is a superficial tear that is round or linear in shape in the anal canal.[1] This condition can be classified as acute or chronic, depending on the duration.[2]

Diagnosis Considerations

In most cases, diagnosis is based on physical examination and patient history. Clinical features of the condition include pain upon defecation in addition to the presence of bright red color.[1-3]

Differential Diagnosis

Careful assessment is prompted as it helps in detecting conditions with similar presentations, such as:[1,3]

- Hemorrhoids
- Perianal Abscess that forms anal fistula
- Rectal Ulcer

Treatment Recommendations and Considerations

Non-surgical Treatment[4]

Recommendation	Grade of Recommendation
Nonoperative treatment of acute anal fissures continues to be safe, has few side effects, and should typically be the first-line treatment.	Strong recommendation based on moderate-quality evidence, 1B.
Anal fissures may be treated with topical nitrates, although side effects may limit their efficacy.	Strong recommendation based on high-quality evidence, 1A.
Compared with topical nitrates, the use of calcium channel blockers for chronic anal fissures has a similar efficacy, with a superior side effect profile, and can be used as first-line treatment.	Strong recommendation based on high-quality evidence, 1A.
Botulinum toxin has similar results compared with topical therapies as first-line therapy for chronic anal fissures, and modest improvement in healing rates as second-line therapy following treatment with topical therapies.	Strong recommendation based on low- and very-low-quality evidence, 1C.

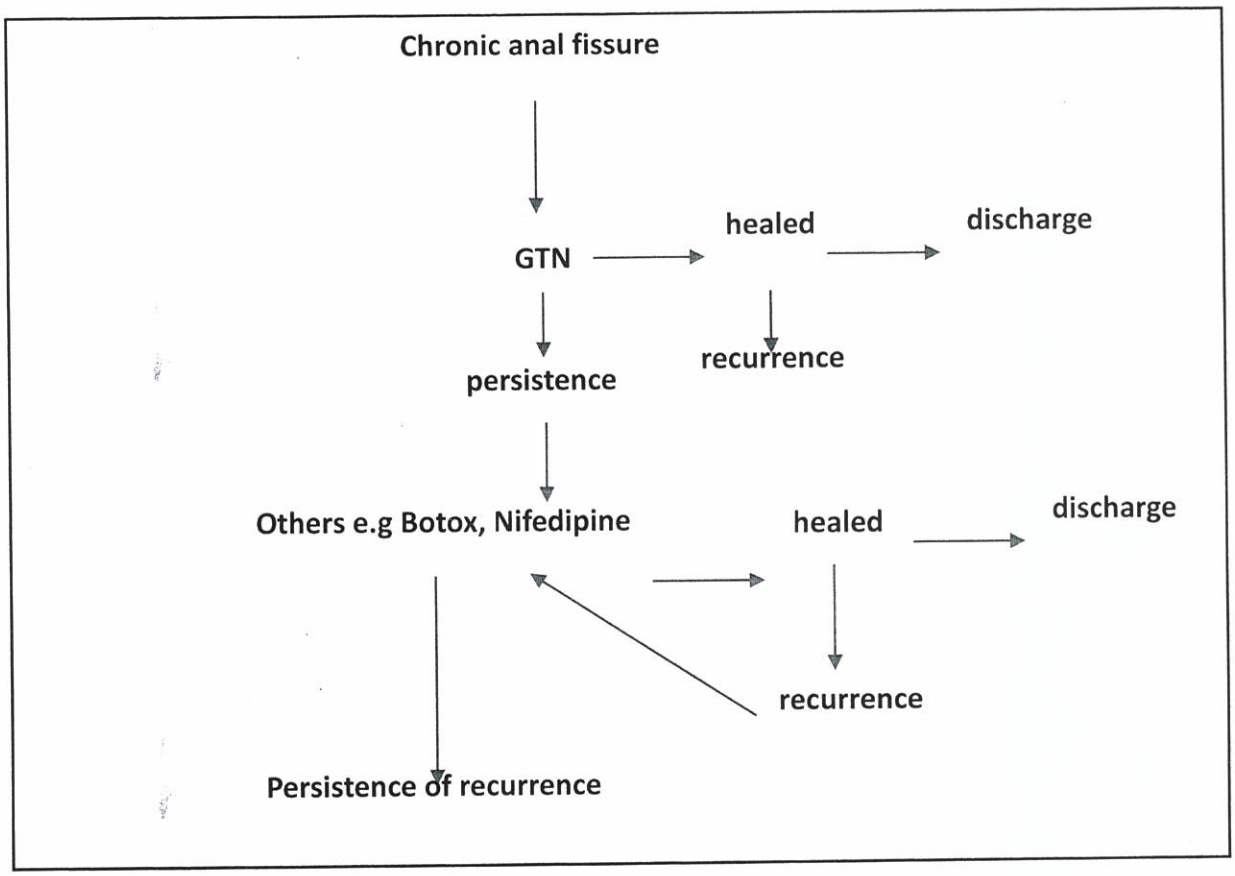
Surgical Treatment[4]

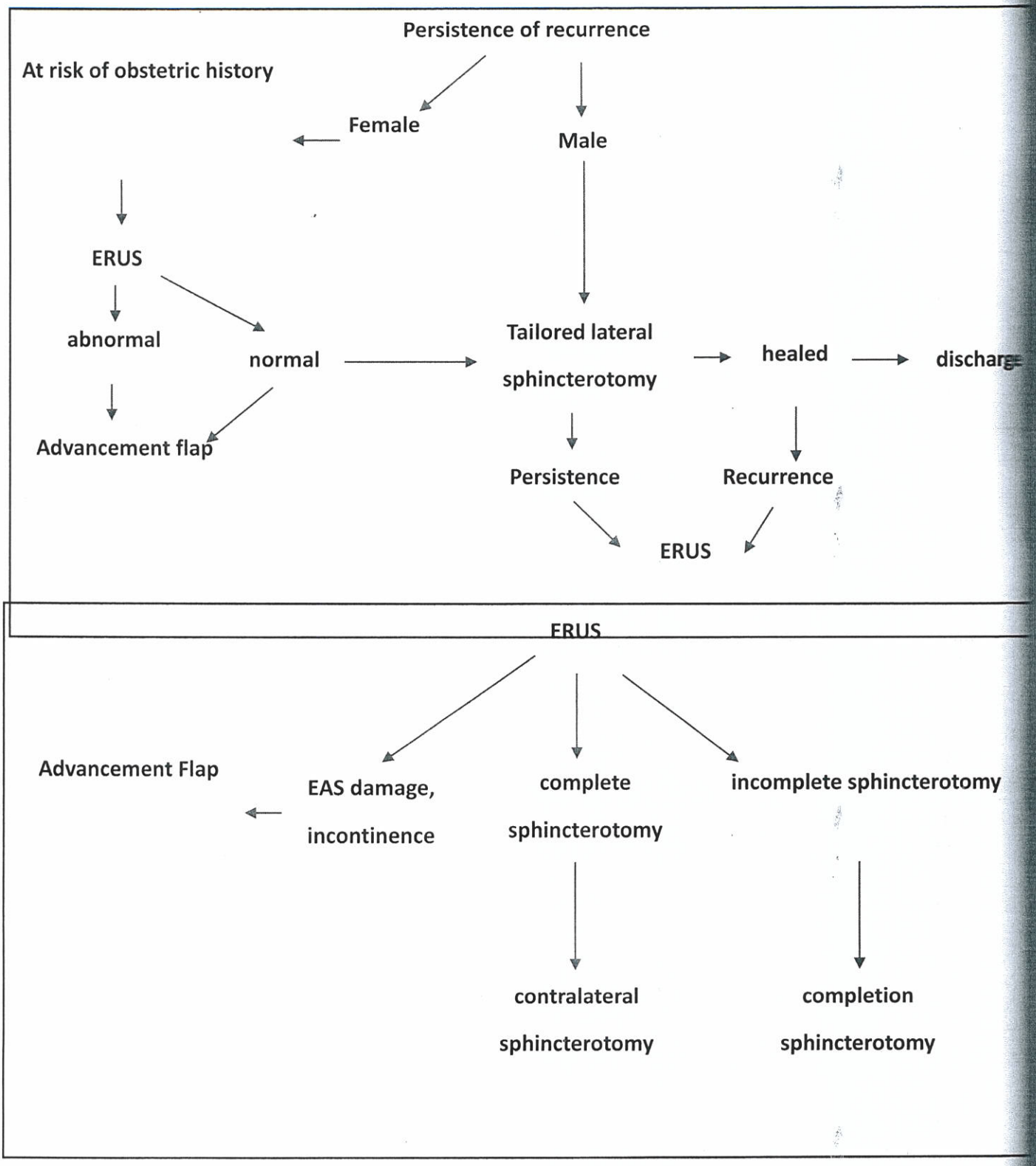
Recommendation	Grade of Recommendation
Lateral internal sphincterotomy is associated with consistently superior healing rates compared with medical therapy for chronic anal fissure and thus may be offered in select patients without first confirming failure of pharmacological treatment.	Strong recommendation based on high-quality evidence, 1A.
Of all surgical options, lateral internal sphincterotomy is the treatment of choice for chronic anal fissures.	Strong recommendation based on high-quality evidence, 1A.
Open and closed techniques of lateral internal sphincterotomy yield similar results and either technique may be used.	Strong recommendation based on high-quality evidence, 1A.
Lateral internal sphincterotomy tailored to the length of the fissure yields equivalent to worse healing rates with less incontinence compared with traditional lateral internal sphincterotomy extending to the dentate line.	Weak recommendation based on moderate-quality evidence, 2B.
Short-term outcomes of repeat LIS for recurrent anal fissure have shown good healing rates with a low risk of fecal incontinence.	Weak recommendation based on low-quality evidence, 2C.
Anocutaneous flap is a safe surgical alternative in the management of chronic anal fissure, with inferior healing rates and with a decreased risk of fecal incontinence compared with LIS.	Weak recommendation based on moderate-quality evidence, 2B.
The addition of an anocutaneous flap to botulinum toxin injection or to lateral internal sphincterotomy decreases postoperative pain and allows for primary wound healing.	Weak recommendation based on low-quality evidence, 2C.

Considerations[4]

Recommendation	Grade of Recommendation
Miscellaneous causes of anal fissure: Less commonly encountered etiologies of anal fissure such as Crohn's disease, sexually transmitted diseases, and low-pressure fissures are collectively discussed below because there is a paucity of literature on these topics.	Weak recommendation based on low-quality evidence, 2C.

Treatment Algorithms




Persistence of recurrence
At risk of obstetric history
Female
Male
ERUS
abnormal
normal
Tailored lateral
sphincterotomy
healed
discharge
Advancement flap
Persistence
Recurrence
ERUS
ERUS
Advancement Flap
EAS damage,
incontinence
complete
sphincterotomy
incomplete sphincterotomy
contralateral
sphincterotomy
completion
sphincterotomy

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(iii) Chapter 14: Guidelines for the Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula Anorectal Abscess

Overview

Anorectal abscess is a condition that is characterized by infection of the glandular crypts. The infection arises from non-specific obstruction of these glandular crypts.[1]

Diagnosis Recommendations[2]

Recommendation	Grade of Recommendation
A disease-specific history and physical examination should be performed, emphasizing symptoms, risk factors, location, and presence of secondary cellulitis or fistula-in-ano.	Strong recommendation based on low-quality evidence 1C.

Differential Diagnosis

Differential diagnosis involves conditions such as, Crohn's disease, ulcerative colitis, anal fistula, trauma, or fissure, malignant conditions, sexually transmitted diseases and other related diseases.[1]

Treatment Recommendations and Considerations

Non-surgical Treatment[2]

Recommendation	Grade of Recommendation
Antibiotics may be considered in patients with significant cellulitis, underlying immunosuppression, or concomitant systemic illness. In general, the addition of antibiotics to routine incision and drainage of an uncomplicated anorectal abscess in healthy patients does not improve healing or reduce recurrence; it is not generally recommended.	Weak recommendation based on low-quality evidence 2C.

Fistula-in-Ano

Overview

Anal fistula, also known as fistula-in-ano, arises from occlusion and infection of the anal glands, which leads to the formation of abscess.[3]

Diagnosis Recommendations[2]

Recommendation	Grade of Recommendation
A disease-specific history and physical examination should be performed, emphasizing symptoms, risk factors, location, and presence of secondary cellulitis or fistula-in-ano.	Strong recommendation based on low-quality evidence 1C.

Differential Diagnosis[3]

Differential diagnosis involves diseases, including proctitis, anal cancer, pilonidal cyst, IBD, diverticulitis, constipation and hidradenitis suppurativa.

Treatment Recommendations and Considerations

Surgical Treatment[2]

Recommendation	Grade of Recommendation
Simple fistula-in-ano in patients with normal anal sphincter function may be treated with fistulotomy. Fistulotomy is an effective treatment for simple anal fistula that results in healing in over 90% of patients.	Strong recommendation based on moderate-quality evidence, 1B.
Endoanal advancement flaps are recommended for the treatment of fistula-in-ano. Endoanal advancement flap is a sphincter-sparing technique that consists of curettage of the fistula tract, suture closure of the internal opening, and mobilization of a segment of proximal healthy anorectal mucosa, submucosa, and muscle to cover the site. Reports indicate healing in 66% to 87% after initial endoanal advancement flap for cryptoglandular fistula.	Strong recommendation based on moderate-quality evidence, 1B.
Simple and complex anal fistulas may be treated with ligation of the intersphincteric fistula tract (LIFT) procedure.	Strong recommendation based on moderate-quality evidence, 1B.

The ligation of the intersphincteric fistula tract (LIFT) procedure involves suture closure and division of the fistula tract in the intersphincteric plane. A draining seton may be used before the LIFT procedure to promote fibrosis of the tract, which may facilitate the procedure but has not been shown to affect its success.	
A cutting seton may be used with caution in the management of complex cryptoglandular anal fistulas. With complex anal fistulas, initial seton placement to control sepsis is typically followed by a secondary, definitive procedure to eradicate the fistula. Healing rates have ranged from 62% to 100%, depending on the type of secondary procedure. Alternatively, the seton may also be left in place and tightened at intervals to allow gradual division of the sphincter. This technique was used in a recently reported series of 200 patients in whom a suture seton was tightened every 6 to 8 weeks, in preparation for a superficial or "controlled" fistulotomy. Healing occurred in 94% of patients with only minor disturbances in anal sphincter function in 4% of patients.	Weak recommendations based on moderate-quality evidence, 2B.
The fistula plug is a relatively ineffective treatment for fistula-in-ano.	Weak recommendations based on moderate-quality evidence, 2B.
Fibrin glue is a relatively ineffective treatment for fistula-in-ano. The success of fibrin glue therapy for anal fistulas has varied among studies with retrospective and prospective data indicating fistula resolution in the range of 14% to 63%.	Weak recommendations based on moderate-quality evidence, 2B.

Considerations[2]

Recommendation	Grade of Recommendation
Symptomatic, simple, low anal fistulas in patients with Crohn's disease may be treated by fistulotomy. Fistulotomy is safe and effective in low-lying, simple anal fistulas involving no or minimal external anal sphincter. Given the chronicity of Crohn's disease and high frequency of disease relapse, preservation of sphincter function is essential. Before embarking on any fistulotomy, surgeons should consider all relevant patient factors, in particular, the extent of anorectal disease, sphincter integrity, existing continence, rectal compliance, presence of active proctitis,	Strong recommendation based on low-quality evidence, 1C.

proctectomy, this recommendation needs to be balanced by the data that demonstrate that healing of anal fistulas with tacrolimus is very unlikely. This is a complex decision and needs to involve the patient, the surgeon, and the gastroenterologist. For patients with complex perianal Crohn's disease, diversion rates range from 31% to 49%. Evidence suggests at least an initial response to diversion in up to 81% of patients; however, a sustained remission of symptoms can only be maintained in about 26% to 50% of patients.	

Rectovaginal Fistula

Overview

Generally, fistula is a connection of abnormal nature between 2 points on an epithelial surface. As the name implies, rectovaginal fistula is an abnormal connection between the rectum and vagina.[4]

Diagnosis Recommendation[4]

- Diagnosis is based on history and physical examination.
- Imaging techniques and endoscopic procedure can be used to confirm diagnosis.
- Laboratory tests can be ordered to understand the impact of the disease.

Differential Diagnosis[4]

Differential diagnosis involves identifying conditions with similar signs/symptoms, such as appendicitis, urinary tract infection, IBD, aortitis, colon cancer, and similarly related conditions.

Treatment Recommendations and Considerations

Non-surgical Treatment[2]

Recommendation	Grade of Recommendation
Nonoperative management is recommended for the initial management of obstetrical rectovaginal fistula and may also be considered for other benign and minimally symptomatic fistulas.	Weak recommendation based on low-quality evidence, 2C.

Surgical Treatment[2]

A draining seton may be required to facilitate resolution of acute inflammation or infection associated with rectovaginal fistulas.	Strong recommendation based on low-quality evidence, 1C.
Endorectal advancement flap, with or without sphincteroplasty, is the procedure of choice for most simple rectovaginal fistulas.	Strong recommendation based on low-quality evidence, 1C.
Episioproctotomy may be used to repair obstetrical or cryptoglandular rectovaginal fistulas associated with extensive anal sphincter damage. Episioproctotomy with reconstruction of the ano-rectalvaginal septum is a transperineal approach that has been used to repair rectovaginal fistulas in patients with extensive anal sphincter defects and associated fecal incontinence with fistula healing in the range of 78% to 100% and generally excellent functional outcomes.	Strong recommendation based on low-quality evidence, 1C.
A gracilis muscle or bulbocavernosus muscle (Martius) flap is recommended for recurrent or otherwise complex rectovaginal fistula. The literature on the use of a gracilis flap for the treatment of rectovaginal fistula comprises retrospective studies including no more than 25 patients. In these studies, a gracilis flap was most often used to repair recurrent rectovaginal fistulas of various etiologies and typically utilized concomitant fecal diversion.	Strong recommendation based on low-quality evidence, 1C.
High rectovaginal fistulas that result from complications of a colorectal anastomosis often require an abdominal approach for repair. Fistulization of a colorectal anastomosis to the vagina has been reported to occur in as many as 10% of women who undergo low anterior resection. When this occurs, fecal diversion is generally recommended as the initial step to	Strong recommendation based on low-quality evidence, 1C.

facilitate resolution of the acute inflammation and associated infection. In some cases, diversion alone may result in healing. In 2005, Kosugi et al reported that 6 of 16 (37%) colorectal anastomotic-vaginal fistulas treated with diversion alone healed within a period of 6 months. Persistent fistulas were treated with neocolorectal anastomosis, endorectal advancement flap, or gluteal-fold flap interposition. With the abdominal approach to a high rectovaginal fistula, the rectum and vagina are separated, the defects are debrided and closed, and healthy tissue, such as omentum, is interposed between the vagina and rectum.	
Proctectomy with colon pull-through or coloanal anastomosis may be required to repair radiation-related and recurrent complex rectovaginal fistula. Rectovaginal fistulas that develop after pelvic irradiation may be amenable to repair with muscle flap interposition (described above), on-lay patch of colon, rectal sleeve excision with coloanal anastomosis, or proctectomy with primary or staged coloanal anastomosis. The sleeve excision technique includes resection of the rectum proximal to the fistula, mucosectomy of the fistulized and distal rectum, pull-through of healthy colon into the remaining muscular tube of rectum, and a sutured coloanal anastomosis.	Weak recommendation based on low-quality evidence, 2C.

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(iii) Chapter 15: Guidelines for the Management of Infectious Pilonidal Sinus Disease

Overview

Pilonidal sinus is a disease that results from entrapping hair follicles in the presacral region as a result of incomplete fusion in the dorsal midline. Congenital factors were thought to be the contributing element for the disease. However, recent research has demonstrated acquired factors as contributors to disease etiology.[1]

Diagnosis Recommendations and Considerations[2]

- Diagnosis is usually based on patient history, physical examination, risk factors and symptoms evaluation.
- Contributing risk factors include family history, weight, trauma and poor hygiene.
- Imaging techniques are reserved for cases where the diagnosis is not clear, to determine the extent of the disease, and to help rule out other causes.
- The extent of the disease is evaluated through the use of methylene blue.

Differential Diagnosis[2]

Differential diagnosis involves conditions such as ana fistula, inflammatory bowel disease (IBD), and abscess.

Treatment Recommendations and Considerations[3]

- An asymptomatic pilonidal disease does not require treatment. A pilonidal abscess should be incised.
- After regression of the acute inflammation, a definitive treatment method should be applied.
- An excision is the standard treatment method for the chronic pilonidal disease. Open wound healing is associated with a low postoperative morbidity rate; however, it is complicated by a long healing time.

- The minimally invasive procedures (e.g., pit picking surgery) represent a potential treatment option for a limited chronic pilonidal disease. However, the recurrence rate is higher compared to open healing.
- Excision followed by a midline wound closure is associated with a considerable recurrence rate and increased incidence of wound complications and should therefore be abandoned.
- Off-midline procedures can be adopted as a primary treatment option in chronic pilonidal disease.
- At present, there is no evidence of any outcome differences between various off-midline procedures.
- The Limberg flap and the Karydakis flap are most thoroughly analyzed off-midline procedures.
- Recently the use of VAPNDT video assisted pilonidal disease treatment depend on complete seen curettage and cautery either by diathermy or better by diode laser which aid in closures of all tracts.

Complications[2]

Complications are usually related wound healing process and infection at the surgical site.

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Chapter 16: Safe Cholecystectomy

"Injuries to the bile ducts are unfortunately not rare and often turn out to be tragedies" Grey Turner, 1944 [1]

Gallstone disease is common all over the world, Cholecystectomy is the treatment of choice for symptomatic gallstone disease. It is one of the commonest surgical procedures performed by a general surgeon.

Cholecystectomy can be associated with several complications—general (due to anesthesia and those common to any operation) and specific (to cholecystectomy); of the specific complications of cholecystectomy, bile duct injury (BDI) is the most important.

Therefore, in this document we provide some tips and tricks for "how to achieve a safe cholecystectomy".

Surgeon training and learning curve:

A surgeon should embark on laparoscopic cholecystectomy only after receiving adequate and proper training, preferably during residency.

In the beginning of his/her career, a surgeon should take

1- young, thin built female patients

2- With short duration of symptoms,

3- No history of acute cholecystitis, jaundice/cholangitis or acute pancreatitis, and

4- Distended thin-walled gall bladder on ultrasonography (US).

Work Up

All patients scheduled to undergo cholecystectomy must have:

1- A good US

a. Evaluating the gall bladder wall for any thickening and

b. looking for any evidence of biliary obstruction in the form of ir rahepatic biliary radical dilatation IHBRD

2- Complete liver function tests (LFTs).

In 1997, Palazzo published a paper referring to the Risk Criteria for the Existence of Common Bile Duct (CBD) Stones; in there he calculated [2]

the possibility of a certain patient having CBD stones, depending on several factors:

1- Low Risk (CBD stones in 2–3% of cases)

a. no history of stone migration, i.e., cholangitis or pancreatitis,

b. Normal LFTs

c. CBD diameter $\leq$ 7 mm on US.

2- Medium Risk (CBD stones in 20–40% of cases)

a. History of stone migration, i.e., cholangitis or pancreatitis,

b. Gamma-glutamyl transpeptidase (GGT) and/or transaminases (ALT/AST), and/or alkaline phosphatise (ALP) twice the normal value, and/or

a. CBD diameter = 8–10 mm on US.

3- High Risk (CBD stones in 50–80% of cases)—

b. Recent history of jaundice, cholangitis or pancreatitis,

c. Double or more of ALP and/or GGT and/or

d. CBD diameter > 10 mm on US.

Accordingly, Kapoor suggested

1- Low risk group → laparoscopic cholecystectomy without any further investigations.

2- Medium risk group → laparoscopic cholecystectomy with a laparoscopic intraoperative

cholangiogram (IOC)

3- High risk group → MRCP ± ERCP to ensure CBD clearance of stones then laparoscopic cholecystectomy ± CBD exploration accordingly. [3]

Equipment

Proper equipment is a must to perform a safe laparoscopic cholecystectomy and reduce the risk of BDI

1- High-definition camera with a 30° telescope is a must to view the Calot's triangle from both front (anterior) and behind (posterior) aspects.

2- Good quality monitor,

3- High flow insufflator

4- Properly insulated instruments.

5- A good electrocautery is required

An ultrasonic scalpel is not mandatory for performing laparoscopic cholecystectomy, however, it may be preferred in case of liver cirrhosis or portal hypertension.

Consent

A proper detailed including

1- A chance of conversion to open operation and
2- A small risk of BDI

Informed written consent must be obtained from all patients undergoing laparoscopic cholecystectomy.

Access (Entry)

Open technique (using an infra-umbilical incision) of insertion of the first trocar is safer as compared to blind insertion of Veress needle and closed insertion of the first trocar. Urinary bladder should be evacuated just before patient transfer to the operation room.

Ports

The two working ports (epigastric and subcostal) should be so placed that the tips of the instruments introduced through them meet at a right angle at the gall bladder neck.

Landmarks

Important and useful landmarks to be identified during cholecystectomy.are

1- First part of the duodenum,
2- Segment IV (quadrate lobe) of liver,
3- Rouviere's sulcus [7],
4- Hartmann's pouch, and
5- Cystic lymph node

1- The first part of the duodenum should be retracted down (caudad) to view the supraduodenal part of the hepato-duodenal ligament. In a thin built patient, the bluish hue of the CBD may be obvious.

2- Hori have described a U-shaped line from the right border of the round ligament across the base of the quadrate lobe (segment IV) to the left border of the gall bladder. [4]

The bottom of this U identifies the hepatic hilum.

The line joining the first part of the duodenum to the base of segment IV (quadrate lobe) identifies the hepato-duodenal ligament

Dissection should be kept to the right of it.

3- Rouviere's sulcus on the undersurface of the right lobe of liver is an important and useful landmark during laparoscopic cholecystectomy. It marks the position of the right posterior sectoral pedicle.

Dissection in the Calot's triangle should be kept anterior to the Rouviere's sulcus.

4- Hartmann's pouch is an outpouching of the gall bladder neck—CBD lies to its left.

5- Cystic lymph node is a very important landmark to identify the cystic artery. If the dissection is kept lateral to (to the right of) the cystic lymph node, it is very

unlikely that damage will be caused to the CBD. [5]

Pulsations of the proper hepatic artery should be looked for in the hepato-duodenal ligament— CBD lies to the right of the proper hepatic artery. Sutherland suggested the mnemonic B-SAFE for 5 landmarks, for correct placement of cognitive map to avoid a BDI. [6]

B: Bile duct,

S: Rouviere's Sulcus,

A: Hepatic Artery,

F: Umbilical Fissure,

E: Enteric (duodenum)

NOTE that the size of a duct does not differentiate between the cystic duct and the CBD; normal CBD can be just 3-4 mm in diameter and may be easily mistaken for the cystic duct.

Retraction

Gall bladder fundus should be *retracted upwards (cranially) towards the right shoulder* of the patient to retract the liver.

Gall bladder neck should be *retracted downwards and outwards (laterally) towards the right elbow* of the patient to open the Calot's triangle and to place the cystic duct at a right angle to the CBD.

Gall bladder neck should be *retracted upwards and medially towards the left shoulder* of the patient to view the posterior surface of the Calot's triangle for lateral dissection.

Dissection and Calot's triangle

1- The first step is to *open the peritoneum on the posterior (inferior) surface of the Calot's triangle* (lateral dissection) ; this widens the Calot's triangle.
2- Peritoneum on the anterior (superior) aspect of the Calot's triangle should then be opened (medial dissection).
3- Dissection of the lower third of gall bladder from the liver bed should be targeted before aiming to dissect cystic duct and artery.
4- Identification, dissection and isolation of cystic artery and duct.

Calot's triangle should be viewed from both overhead and underneath aspects, this can easily be done with a 30° telescope. While doing cholecystectomy, the surgeon should stay close to (hug) the gall bladder neck—cystic duct junction (and not the cystic duct—CBD junction). [7]

Critical View of Safety

The concept of the critical view of safety was described by Strasberg. [8]

It includes dissection in the Calot's triangle to free it of fatty, fibrous, and areolar tissue so that *two and only two structures* (cystic artery and cystic duct) are seen to be attaching the gall bladder to the hepato-duodenal ligament

As far as possible, the critical view of safety should be demonstrated. Flagging, i.e., turning the gall bladder infundibulum (neck) around is a helpful maneuver to show that the cystic duct and the CBD are seen as two separate structures.

Clipping

Cystic duct should be 'palpated' with a grasper for any stones which should be milked back into the GB or crushed into small fragments for spontaneous passage into the CBD and then across the papilla into the duodenum.

Before firing/pressing the clip, it must be ensured that its tips are beyond the circumference of the structure being clipped, i.e., the cystic artery and the cystic duct and no other tissue/structure is being clipped. While applying the first clip on the cystic duct, traction on the gall bladder neck should be released to avoid the clip encroaching on a part of the circumference of the CBD.

Double clips should always be applied on the patient (CBD) side of the cystic duct and the cystic artery for additional security.

Cystic artery should also be divided close to (on) the gall bladder—to avoid injury to the right hepatic artery. This may mean dividing the anterior and posterior branches of the cystic artery separately .Another advantage is that even if the clip is loose, there is a remaining stump of the cystic artery which can then be controlled with another clip.

Second Opinion

Before the cystic duct is clipped and divided it is advisable to take the opinion of an independent second observer who is unbiased from the heuristic impression of the operating surgeon. [4,9]

Cystic Plate

Gall bladder should be dissected off its bed in the liver preserving the cystic plate on the gall bladder bed—the plane of dissection, thus, is between the gall bladder wall and the cystic plate. This is a bloodless plane and also avoids injury to a peripheral intrahepatic bile duct.

Extraction

A thin-walled gall bladder full of multiple small stones or an acutely inflamed gall bladder full of pus should be removed in a bag to avoid bile/pus and stone spill.

Closure

The aponeurosis (linea) of the 10 mm ports should be closed to prevent an incisional hernia. At the 5 mm port sites, skin alone is closed.

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