Diagnostic Imaging Pathways - Scrotal Mass

Population Covered By The Guidance

This pathway provides guidance on the imaging of adult male patients with a scrotal mass.

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Quick User Guide

Move the mouse cursor over the PINK text boxes inside the flow chart to bring up a pop up box with salient points.
Clicking on the PINK text box will bring up the full text.
The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

Pathway Diagram

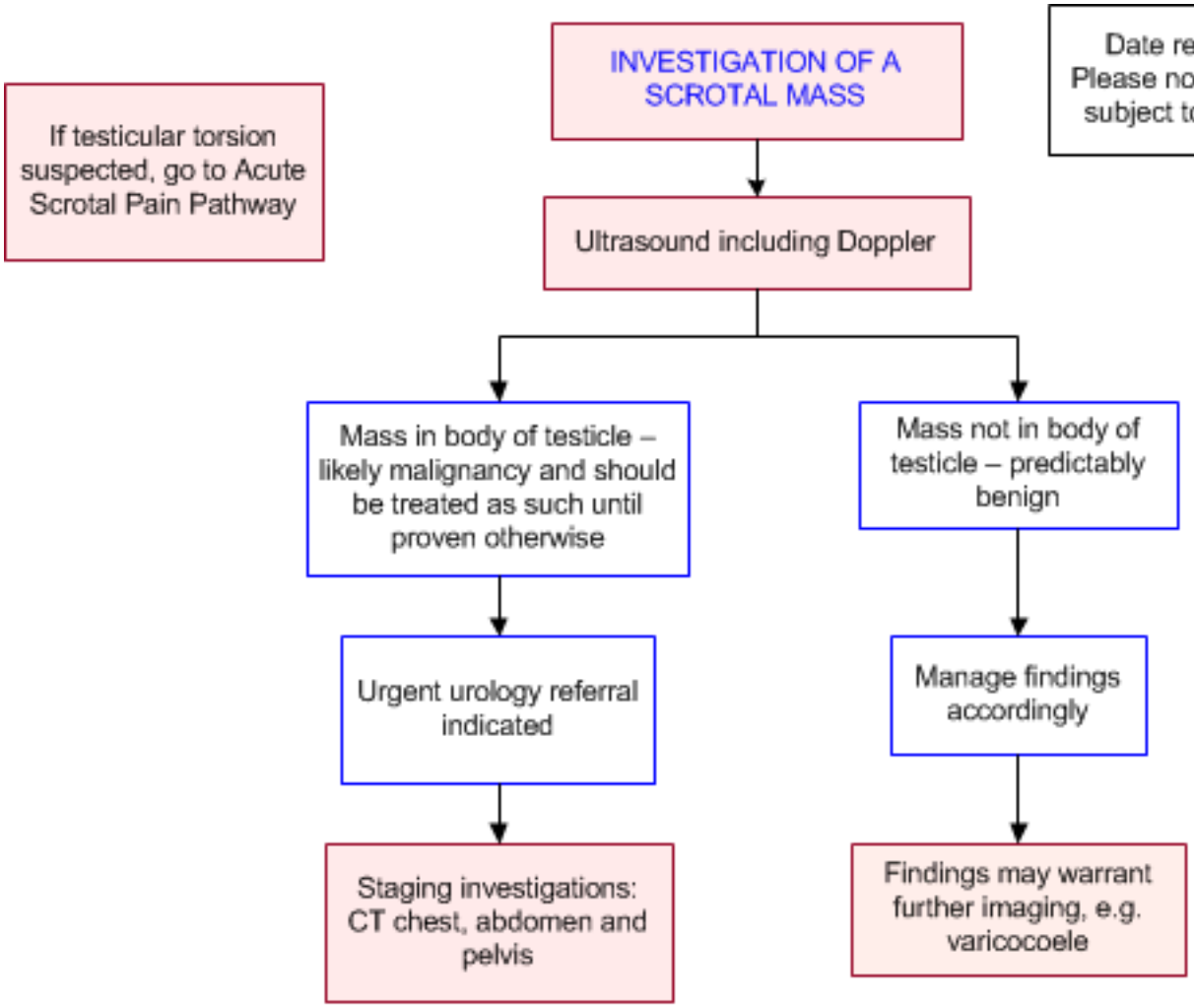
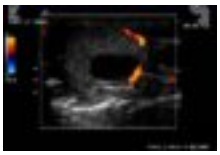


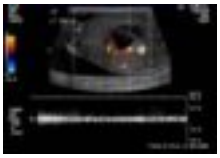
Image Gallery

Note: These images open in a new page

1 

Testicular Cyst

Image 1 (Ultrasound): Left testicular cyst with no discernable wall or flow.

2 

Testicular Tumour

Image 2 (Ultrasound): Solid and cystic lesion with thick walls and marked vascularity in some areas. The appearances are consistent with a tumour.

3a 

Testicular Tumour

Image 3a: Orchidectomy specimen showing complete replacement of the normal testicular parenchyma with the classical "cut-potato" appearance of a seminoma. The tunica albuginea is intact.

3b

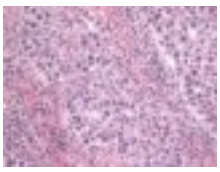
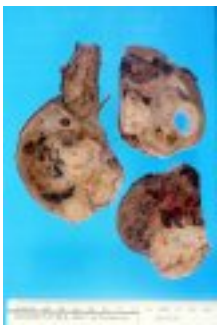


Image 3b (H&E, x2.5): Histological section of a seminoma showing groups of malignant cells with large nuclei and prominent nucleoli. There are also intervening fibrous bands with an infiltrate of lymphocytes and plasma cells.

4a



Testicular Tumour

Image 4a (H&E, x2.5): Orchidectomy specimen showing a teratoma with areas of cyst formation and haemorrhage.

4b

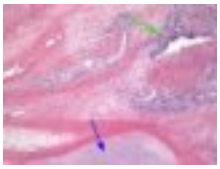
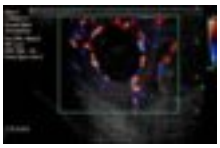


Image 4b (H&E, x2.5): Histological section of a teratoma (non-seminomatous germ cell tumour) showing hyaline cartilage and islands of columnar epithelium.

5



Scrotal Abscess

Image 5 (Ultrasound): A central mass lesion is located superficially and in the midline towards the inferior pole of the scrotum. It has a low echogenic rim but contains echogenic material with no discernable flow within the lesion. There is inflammation of the surrounding tissues.

Teaching Points

- Ultrasound is the preferred imaging modality to evaluate a scrotal mass 1-3
- Ultrasound can be used to differentiate between intra and extra testicular masses. It is also useful for differentiating solid from cystic masses 4
- A painless solid testicular mass is pathognomonic for testicular tumour, 1 though a proportion present with pain
    - 95% of testicular malignancies are germ cell tumours 5
    - In older men over 60, lymphoma is the most common testicular malignancy 6
- A mass in the body of the testicle is likely malignant until proven otherwise and is an indication for urgent urology referral

Ultrasound

- Ultrasound is the preferred imaging modality to evaluate a scrotal mass 1-3
- Indications 7
    - To confirm a clinical diagnosis of tumour and to assess contralateral testis
    - To assess clinically solid scrotal masses
    - To assess an impalpable testis within a hydrocoele
    - To confirm a borderline clinical diagnosis of varicocoele in appropriate patients
- Can differentiate between testicular and extra-testicular masses with accuracy approaching 100%. 8 The vast majority of extra-testicular masses are benign 9
- Can differentiate fluid filled lesions (eg hydrocoele, spermatocoele, haematocoele etc.) from solid

intra-testicular tumours 4
- Sensitivity and specificity for differentiating between benign and malignant testicular masses approaches 100% 10-12
- A mass in the body of the testis is likely malignant until proven otherwise and warrants urgent urology referral
- Some benign conditions can mimic malignancy like focal infarction, haematoma and infection that can also appear as hypoechoic mass like areas with variable internal blood flow, 4 however malignancy cannot be reliably excluded with ultrasound only so specialist referral for further investigation is still indicated
- In select situations when the diagnosis is in doubt, percutaneous biopsy may prevent unnecessary orchidectomy. 13 MRI is also performed as an adjunct to ultrasound in some centres 9

Staging of Testicular Cancer

- The staging of testicular cancer requires histological staging as well as tumour markers and assessment for distant metastases 1
- Common sites of extra-testicular disease are the abdominal lymph nodes, lung, liver and bone. Abdominal retroperitoneal lymph nodes are considered regional lymph nodes 4
- CT of the abdomen and pelvis is recommended to assess for metastases to regional lymph nodes 1-3
- In older studies, the accuracy of CT for detecting metastatic retroperitoneal lymph nodes is 73-97%, with sensitivity 65-96% and specificity 81-100% 14-20
- CT chest is recommended to assess for pulmonary metastasis 2
- MRI has also been validated to assess for regional nodal metastases, 21,22 but is generally reserved for select cases where contraindication to iodinated contrast prohibits adequate assessment, or where radiation exposure is a particular concern

Varicocoele Associated with Cancer

- Rarely varicocoele may be associated with a renal or retroperitoneal tumour compressing the venous drainage of the testis
- 1.8% of varicocoeles are associated with cancer, with no difference in risk between unilateral varicocoeles of either laterality or bilateral varicocoeles 23
- Varicocoele is the presenting complaint for 2.3% of renal cell carcinomas 24
- Varicocoele is often a late sign of malignancy, so history and examination should be performed to identify other signs and symptoms of malignancy 25
- Some authors suggest routine ultrasound imaging of the ipsilateral retroperitoneal area and abdomen upon demonstration of a new varicocoele, or evaluation with CT, 25,26 but there are no trials demonstrating benefit from either of these practices. The benefit of CT screening must be balanced with risk of malignancy associated with radiation exposure 23

References

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. Download the document

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