Population Covered By The Guidance

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

Date reviewed: July 2018
Date of next review: July 2021
Published: April 2019

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.

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<th>SYMBOL</th>
<th>RRL</th>
<th>EFFECTIVE DOSE RANGE</th>
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<td>Minimal</td>
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<td>![Symbol]</td>
<td>High</td>
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Pathway Diagram
INVESTIGATION OF A SCROTAL MASS

If testicular torsion suspected, go to Acute Scrotal Pain Pathway

Ultrasound including Doppler

Mass in body of testicle – likely malignancy and should be treated as such until proven otherwise

Urgent urology referral indicated

Staging investigations: CT chest, abdomen and pelvis

Mass not in body of testicle – predictably benign

Manage findings accordingly

Findings may warrant further imaging, e.g. varicocele

Date reviewed: June 2018
Please note that this pathway is subject to review and revision

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.
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.

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 varicocele 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

- 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

**Varicoceles Associated with Cancer**

- Rarely varicoceles may be associated with a renal or retroperitoneal tumour compressing the venous drainage of the testis
- 1.8% of varicoceles are associated with cancer, with no difference in risk between unilateral varicoceles of either laterality or bilateral varicoceles [23]
- Varicocele is the presenting complaint for 2.3% of renal cell carcinomas [24]
- Varicocele 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 varicocele, 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

(NCCN guidelines). **Testicular cancer.** 2016. (Guideline). [View the reference](#)


Information for Consumers

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