DISORDERS OF THE MALE GENITALIA

RELEVANT ANATOMY

When considering a male genitalial problem, always consider these four structures: 1) Tunica vaginalis, 2) Testis, 3) Epididymis, 4) Spermatic cord.

EPIDIDYMITIS (Essential Surg, pp 357)

Bacterial epididymitis is the most common inflammatory disorder of the scrotal contents. This is commonly due to a urethral infection conducted via the vas deferens. UTI's (usually as a result of E. Coli, age group 50 - 65) and/or STD (i.e.: *Chlamydia, Neisseria gonorrhoeae,* age group: 15-30*)* are the cause. Epidydimitis is wrongly interpreted as epidydimitis-orchitis or just orchitis. The testicle rarely gets infected; so do not make this mistake.

Differential diagnosis of epidydimitis is: vasitis nodosa, and sperm granuloma (following vasectomy).

CLINICAL FEATURES

Acute presentation of pain and scrotal oedema, tenderness on the affected side. There is marked erythema of the skin of the surrounding structures as well (i.e.: this is why people mistake a epidydimitis for an epidydimitis-orchitis or orchitis, due to redness of the surrounding areas, so they think it must be infected as well).

MANAGEMENT OF EPIDYDIMITIS

Management should be confined to: broad-spectrum antibiotic (ciprofloxacin) for at least 1 month and bed rest. Urine, blood and urethral discharge (if any) should be done to pin point the culprit organism. Theatre exploration should also be done to exclude possible testicular torsion.

HYDROCOELE (Essential Surg, pp 358)

Surrounding the testis, there is a serous space – this acts as a potential space. Like any potential space, fluid can accumulate here. The tunica vaginalis normally contains a certain amount of fluid, which is in balance between production and reabsorption. Hydrocoeles can be categorised into primary & secondary (includes: trauma, infection, tumour, torsion). Secondary means, the hydrocoele is due to the pathological process in the testis.

Primary Hydrocoeles

Primary hydrocoeles are generally asymptomatic. In children, the hydrocoele develops due to a patent processus vaginalis. In children below the age of 1, these hydrocoeles spontaneously reabsorb. For older children, ligation of the patent processus vaginalis is required.

Primary hydrocoeles can occur in adults as well, presumable due to defective reabsorption of the fluid. This causes a huge soft non-tender swelling, and the underlying

testis usually cannot be palpated. Tran illumination is a **diagnostic** feature of such swellings.

Secondary Hydrocoeles
These hydrocoeles may develop 2nd to infection, tumours, torsion of testis, or trauma. Usually they are small and the underlying testis can be easily palpated to reveal the primary abnormality.

MANAGEMENT OF HYDROCOELES
Determine the cause of the hydrocoele. Is it a primary or secondary hydrocoele? Palpate for any testicular abnormality.

If it's a primary hydrocoele, it can be tapped. Use a needle and aspirate the excess fluid. Aspiration of a primary hydrocoele is not permanent, recurrent attacks can occur, so the following months need to be filled with periodic aspirations, sclerotherapy (after aspiration, 6% aqueous phenol with 1% lignocaine can be injected → inhibits reaccumulation, several treatments may be necessary) or operation. Surgical management involves excising the tunica vaginalis and everting it. Surgery is preferred for younger patients to completely deal with the problem, but with older patients – repeated aspiration is indicated.

If tumour is suspected, DO NOT ASPIRATE. This is because malignant cells can be disseminated via the scrotal skin to its lymphatic field (inguinal nodes). In this case, ultrasonography is indicated.

Hydrocoeles of the cord
Sometimes a hydrocoele develops anywhere along the course of the spermatic cord. This is a local lesion, and also transilluminates. It is called a **encysted hydrocoele of the cord**. In females, a multicystic **hydrocoele of the canal of Nuck.**

EPIDYDIMAL CYST AND SPERMATOCOELE (Essential Surg, pp 359)
Epididymal cysts develop in the upper pole of the epidydimis. This presents as a painless scrotal swelling. There are many cysts, and there is often 1 large cyst. This affects younger people compared to hydrocoeles. These cysts transilluminate, but not as much as hydrocoeles.

Even less commonly, spermatozoa accumulate to form a cyst, called a spermatocoele. These occur in the head of the epididymis, and are clinically similar to epididymal cysts.

VARICOCOELE (Essential Surg, pp 360)
A varicocoele is the dilatation and tortuosity of the veins of the pampiniform plexus. 90% of the time, it occurs on the left side – therefore the different drainage of the right and left sides may have some implication in its pathogenesis. The left testicular vein drains into the left renal vein, while the right testicular vein directly drains into the inferior venae cavae. When you get a varicocoele of the left side, always do a CT scan/ultrasound of the kidneys to make sure there is not tumour mass extending into the venous drainage (renal

adenocarcinoma). It presents as a dull ache, and is not much of a problem – except that it can cause infertility. The reason is because varicocoele result in increased blood flow to the scrotum, therefore increasing the temperature, which may inhibit normal sperm production / function. Eventually, this may lead to testicular atrophy. Varicocoele can only be palpated upon standing and are described as "bag of worms".

Treatment for varicocoele is only if they are symptomatic. The testicular veins are ligated at a point distal to the deep inguinal ring.

TORSION OF THE TESTIS OR EPIDIDYMAL APPENDAGE (Essential Surg 2nd Ed, pp 376)

Torsion of the testis
Torsion of the testis is usually a congenital problem, but it may not cause any symptoms until it presents in an acute scene. In infants the newly descended testis and its tunica vaginalis are highly mobile within the scrotum, as they are not attached to its posterior wall. This allows the testicle and its tunica to twist on itself, called **extravaginal torsion**. Clinically presents as a painful/tender, hard, swollen testis, erythematous skin of scrotum. There may be some abdominal pain, as the innervation of the testicle is derived from the abdominal nerves. Minor anatomical variations can produce a testicle that is more horizontally lying within its tunica vaginalis → this allows for twisting about its axis → called **intravaginal torsion**. Intravaginal torsion compresses the veins of the pampiniform plexus, therefore causing venous infarction. Eventually arterial supply is compromised and the testis may become necrotic and gangrenous. There is a time lag of 4-6 hours for the testicle to be operated on and "saved"!

Clinically, it is difficult to tell between acute epididymitis and testicular torsion.

Torsion of the epididymal appendage (hydatid of Morgagni)
There is a small embryological remnant of the testis at the upper pole of the testis, and this is known as the hydatid of Morgagni. This can undergo torsion and cause acute symptoms similar to those of testicular torsion: pain/tender, swollen, hard, erythematous skin of scrotum. It is not an emergency, but should be differentiated from testicular torsion. Surgical exploration is the option for this.

MANAGEMENT OF SUSPECTED TESTICULAR TORSION (Essential Surg 2nd Ed, pp 376)
If a firm diagnosis between acute epididymitis and testicular torsion cannot be reached, then surgical exploration is mandatory. If testicular torsion is picked up early, radio nuclide scans can show testicular blood flow and provide a definitive diagnosis. Surgical exploration involves untwisting of the involved testis, and suturing to the tunica vaginalis for prevention of recurrence.

Sometimes immediate surgical exploration is not needed, and the torsion can be untwisted using local anaesthetic. This relieves acute symptoms and the post pones the emergency, but surgical securement of the testis is still necessary at a later stage. If

during surgery, the testis are black – them they must be removed. Always check both sides during surgery because testicular torsion have a bilateral predisposition.

TESTICULAR TUMOURS (Essential Surg 2nd Ed, pp 369)
Testicular tumours occur in three peaks: 0-10 yr olds, 20-40 yr olds, >60 yr olds. The Tumours can be classified by: Benign vs. Malignant. Benign lesions are the epidermoid cysts.

Malignant lesions can be divided into germ cell tumours vs. non-germ cell tumours. The non-germ cell tumours arise from gonadal stromal, mesenchymal, and ductal cells. Germ cell tumours are categorised as either **seminomas**, which are derived from spermatocytes, or **non-seminomatous germ cell tumours (NSGCT)**. **Teratomas** make up the majority of NSGCT, and remaining are undifferentiated embryonal cell carcinomas (contain: no organoid elements), choriocarcinomas (contain: syncitio & cytotrophoblastic features) or tumours of mixed cell type.

Out of the non-germ cell tumours, **Leydig cell tumours** and **Sertoli cell tumours** are the commonest. The testis can also be involved in widespread malignancies such as: **lymphoma** & **chronic lymphocytic leukaemia**.

The risk factors for testicular tumours include: age (established above), race (Caucasians at increased risk), undescended testis (4% increase in lifetime risk).

CLINICAL FEATURES OF TESTICULAR TUMOURS (Essential Surg 2nd Ed, pp 370)
Malignant testicular tumours present as a PAINLESS enlarging lump, with involvement of the supraclavicular nodes, or lungs. If the capsule is involved a 2nd hydrocoele may be present, but this does not impinge on palpation of the tumour itself, as it is very small. Both seminomas and NSGCT spread via the lymphatics to the para-aortic nodes (L1/L2). Then they spread to the thoracic duct, supraclavicular nodes and systemic circulation. Lung metastases is common in teratomas. Testicular tumours, often poorly differentiated ones, secrete **hCG (beta-hCG)** and blood levels correlate with the extent of the tumour. Embryonal cell tumours and yolk sac tumours secrete **alpha-fetoprotein (AFP)**. These are important in the investigative procedures, discussed below.

INVESTIGATIONS FOR TESTICULAR TUMOURS
Ultrasound is an excellent investigative procedure to be done of a hard testicular mass is suspected to be a tumour. This is 95% sensitive for tumours in the testis. A CXR is usually performed as a general admission rule, and this may provide information about any hilar node involvement.

Blood tests looking for specific tumour markers are also very valuable. AFPs are found more in teratomas, B-hCG are found more in choriocarcinomas, and lactate dehydrogenase (LDH) is found more in metastatic seminoma. **CT scans** and then done to look for exact involvement of lymph nodes in the abdomen/pelvis. CT scans can also give information about lung metastases.

MANAGEMENT OF TESTICULAR TUMOURS (Essential Surg 2nd Ed, pp 371)
Orchidectomy is the appropriate treatment for primary cancers. The involved testis is removed, and the remaining testis is left untouched. After orchidectomy, treatment is dependent on the tumour type and stage. As a general rule, **seminomas** (stage I – no additional treatment indicated, stage IIa & b, for more advanced disease chemotherapy is indicated) respond well to radiotherapy. As a general rule **NSGCT** respond well to chemotherapy.

Patients should be counselled before any adjuvant therapy is used, because it can affect fertility. Monitoring and surveillance is done by looking for tumour markers and CT scans. Recurrent disease can be treated with appropriate chemo/radio therapy or surgery.