Available online at www.sciencedirect.com
ScienceDirect
The Surgeon, Journal of the Royal Colleges of Surgeons of Edinburgh and Ireland
www.thesurgeon.net

Aetiology, epidemiology and management strategies for blunt scrotal trauma

D.M. Dalton*, N.F. Davis, D.C. O'Neill, C.M. Brady, E.A. Kiely, M.F. O'Brien

Department of Urology, Cork University Hospital, Co. Cork, Ireland

ARTICLE INFO

Article history:
Received 11 February 2014
Received in revised form
27 May 2014
Accepted 18 June 2014
Available online 21 August 2014

Keywords:
Scrotum
Testicular
Trauma
Management
Diagnosis

ABSTRACT

Objectives: To describe our experience of all patients presenting to a tertiary referral centre over a 3 year time period with blunt scrotal trauma and to describe a methodical approach for managing this group of patients.

Methods: A retrospective analysis was performed on all patients presenting to the Emergency Department (ED) of a level 1 trauma centre with blunt scrotal trauma from 2010 to 2013 inclusive. Inclusion criteria included a recent history of blunt scrotal trauma with associated pain and/or swelling of the affected testis on clinical examination.

Results: Twenty-seven male patients with a median age of 19 (range 8–65) years were included and all but 1 patient underwent scrotal ultrasonography upon presentation. Sixteen patients (59%) presented with scrotal trauma secondary to a sports related injury. Fifteen patients were managed conservatively and of the 12 who underwent urgent exploration 9 had a testicular rupture, including 1 who had an emergency orchidectomy due to a completely shattered testis. Four patients had >30% of the testis replaced by necrotic tissue/haematoma; of which 2 ultimately underwent orchidectomy and insertion of testicular prosthesis.

Conclusion: Our findings demonstrate that the necessity for scrotal protection in sports that predispose to scrotal trauma should be reviewed. We also demonstrate the importance of scrotal ultrasonography for determining an appropriate management strategy (i.e. conservative versus surgical treatment) in this young patient cohort.

Introduction

Blunt trauma to the scrotum accounts for less than 1% of trauma related injuries and typically occurs between 10 and 30 years of age.[1] Traumatic injury to the scrotum most frequently occurs during sporting events and common clinical findings at presentation include pain during physical examination with associated scrotal swelling.[2] Scrotal ultrasonography is an established rapid and accurate diagnostic modality for characterising the extent of the scrotal injury; particularly in cases where physical examination is difficult due to patient discomfort. Indications for surgical exploration in the setting of acute scrotal trauma include testicular rupture and a developing haeamtocoele that is 3 times greater than the contralateral testis.[3]

* Corresponding author.
E-mail address: daviddalton@rcsi.ie (D.M. Dalton).
http://dx.doi.org/10.1016/j.surge.2014.06.006

Importantly, early surgical intervention is associated with more favourable functional outcomes in the long-term and conservative management strategies for expanding haematoceles are associated with delayed orchidectomy rates of approximately 50%.[4] Although the aetiology and incidence of scrotal trauma have been previously described globally; there are no studies that have thoroughly investigated management strategies and short to medium-term clinical outcomes for patients presenting with blunt scrotal trauma within Great Britain and Ireland. In the present study we describe our experience of all patients presenting to a level 1 trauma centre over a 3 year time period with blunt scrotal trauma. We also aim to describe a methodical approach for managing patients presenting with acute scrotal trauma.

Methods

Patient demographics

A retrospective analysis was performed on all male patients presenting to Cork University Hospital Emergency Department (ED) with blunt scrotal trauma from 2010 to 2013 inclusive. Inclusion criteria included a recent history of blunt scrotal trauma with associated pain and/or swelling of the affected testis on clinical examination.

Diagnosis of scrotal trauma

All patients provided a detailed history of the precipitating traumatic event and underwent physical examination by an ED physician, urology trainee and/or consultant urologist. Scrotal ultrasonography was performed on all but 1 patient who was immediately taken to theatre for surgical exploration. Operative intervention was performed emergently on this patient due to a history of significant scrotal trauma and clinical concerns regarding a suspected ruptured testis. Ultrasonography was performed by a senior trainee or consultant radiologist using a linear high-frequency transducer in longitudinal and transverse planes to accurately assess the integrity of the testis and to assess for disruption to the contour of the tunica albuginea. Furthermore, colour Doppler was performed to establish vascular flow and the contralateral testis was imaged for comparative purposes in all cases. Haematoma of the scrotum was defined as a focal area of thickening or increased echogenicity within the scrotal wall.[2,5] Intratesticular haematoma was defined as a focal area of altered echogenicity within the testes with no internal flow on colour Doppler and preservation of the ovoid shape in multiple planes.[2,6] Testicular rupture was defined as interruption of the tunica albuginea (or change in contour) or extrusion of seminiferous tubules.[2,5] Finally, findings with scrotal ultrasonography were compared with intraoperative surgical findings Fig. 1.

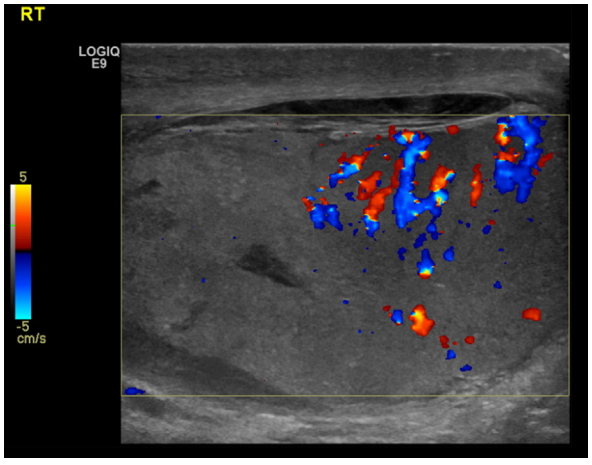

Figure 1 – Image demonstrating testicular rupture with a breach in the tunica albuginea. Normal testicular tissue is seen on the right with vascular flow and haematoma on the left.

Follow-up

All patients were followed up 6 weeks after their initial presentation with clinical examination and repeat ultrasonography as indicated to evaluate testicular healing, testicular atrophy and persistence of testicular pain. Thereafter, further outpatient appointments and repeat ultrasonography were offered as indicated.

Results

Patient demographics

Twenty-seven male patients 8 to 65 (median 19) years of age presented to the ED with blunt scrotal trauma during the 3 year time period. The left testis was involved in 18 cases, the right testis in 8 cases and 1 patient presented with bilateral scrotal trauma. This patient was diagnosed with small bilateral scrotal haematomas on ultrasonography and did not require surgical intervention. The median duration from the occurrence of scrotal trauma to presentation at the ED was 3 days (range 30 min–2 months) and an ED physician typically reviewed patients within 40 min of presentation (median: 32 min; range 6–125 min). Table 1 demonstrates the mechanism of injury of all patients presenting with scrotal trauma during the study period and findings after diagnostic ultrasonography are demonstrated in Table 2.

Table 1 – Mechanism of injury prior to presentation to emergency department.

Mechanism	Number	Sports
Kick	9	7
Hurling sliotar	5	5
Knee	4	2
Punch	4	2
Fall	3	–
Motorbike accident	1	–
Farmyard accident	1	–
Total	**27**	**16**