



ORIGINAL ARTICLE

Testicular Torsion - Our 14 Year Experience and Outcomes

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Abstract

Background: Torsion of the testes is one of the major urological emergencies, with an incidence of 1/4,000 in males younger than 25 years.¹ In this paper, we report our experience in the management of testicular torsion (TT) in Salmaniya Medical Complex (SMC).

Methods: Using SMC's operative logbook, we undertook a retrospective review on all patients who underwent immediate scrotal exploration for a presumptive diagnosis of TT from January 2004 through December 2017. Using SPSS, we present descriptive statistics and report all significant relationships.

Results: A total of 259 scrotal explorations were undertaken for suspected TT. The mean age of patients presenting with suspected TT in our cohort was 20 years, ranging from (11-58 years). Around 42% (n=109) of these had non-viable testes on exploration and a unilateral orchidectomy was performed, 28.5% (n=74) had TT for which detorsion was done while 27.8% (n=72) had a negative exploration. Amongst the patients with TT, 60% (n=183) had an orchidectomy whereas only 40% of testes were salvageable by detorsion and orchidopexy. Although we had an equal number of patients presenting with right and left TT, patients with left sided TT had a significantly higher orchidectomy rate than patients with right sided TT, 61 % (n=66) compared with 39% (n=43) respectively, p<0.029. Conversely the chance of salvaging the right testes was better than the left testes with an OR of 1.969 (95% CI, 1.069-3.626). Patients with salvageable testes, unsalvageable testes and negative explorations had varying contralateral orchidopexy rates of 90%, 71% and 62% respectively.

Conclusions: These findings indicate that our testicular salvage rate is low. As time to presentation is the most important factor in predicting outcome, more effort should be invested into increasing public awareness about TT in Bahrain.

Keywords: Testicular torsion; Orchidopexy; Orchidectomy; Testicular salvage rate; scrotal exploration.

Introduction

Torsion of the testes is one of the most important and urgent urological emergencies.¹ Testicular torsion (TT) is a surgical emergency that is common, with an incidence of 1/4,000 in males younger than 25 years.¹ If the testicle can be detorsed within a 6 hour period over 90% of testicles will be salvaged, while success decreases to less than 10% after 24

hours.^{2,3} In this paper, we report our experience in the management of testicular torsion at Salmaniya Medical Complex (SMC).

Methods

This study was conducted in the urology unit at SMC, the largest secondary teaching hospital in the Kingdom of Bahrain. Using SMC's comprehensive

operative logbook, we performed a 14-year retrospective cross-sectional study. Two hundred and fifty-nine patients who underwent immediate scrotal exploration for a presumptive diagnosis of TT from January 2004 through December 2017 were included. Patients who had other testicular disorders on exploration, such as hydroceles or pyocele were not excluded. The age of patients, the date on presentation, the side of the affected testis, the operative procedure performed and whether an orchidopexy was performed were all recorded for analysis.

Following data collection, all information was entered into SPSS computer program. Using SPSS statistical package version 23, all data were analyzed. We first used descriptive statistical analysis to present patients' demographic, clinical characteristics and clinical outcomes and then used the Chi-Square test of association to examine our nominal variables and calculated the OR. All reported P-values were two sided and were statistically significant at less than 0.05 levels.

Results

Over the period from 2004 to the end of 2017, there were 259 cases of testicular explorations conducted for suspected TT at SMC. Around 42% (n=109) of them had non-viable testes on exploration and a unilateral orchidectomy was performed. Testicular torsion was identified in 28.5% (n=74) and detorsion was done. Almost the same number of patients 27.8% (n=72) had a negative exploration (Figure 1); while 1.5% (N=4) were found to just have a hydrocele on exploration and a hydrocelectomy performed. Among those with TT, 60% (n=183) had an orchidectomy, while only 40% of testes were salvageable by detorsion and orchidopexy, giving an operative salvage rate of 40%.

Cases of TT were almost distributed equally between the right and left testes, with 42% (n=110) and 44% (n=115) of patients having TT on the right and left respectively. However, patients with left sided TT had a significantly higher orchidectomy rate than patients with right sided TT, 61% (n=66) compared with 39% (n=43), respectively. In 13% (n=34) of patients, the site of exploration or torsion was not mentioned in the records.

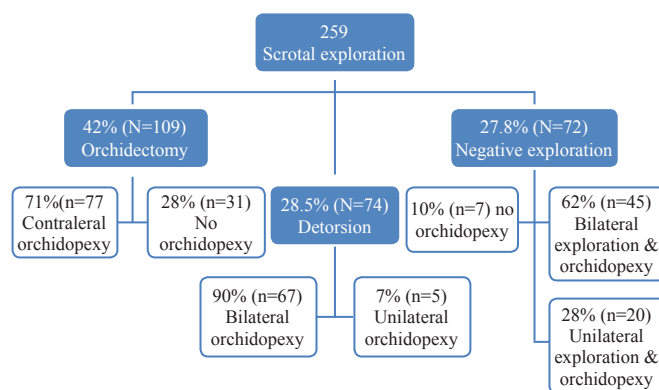


Figure 1: Details of 259 cases of testicular explorations for suspected Testicular Torsions at Salmaniya Medical Complex, Bahrain

This association between the side of TT and the frequency of orchietomy was statistically significant with a moderate effect size (Phi=0.165). Approximately 61% (n=63) of patients with left sided testicular torsion had an orchidectomy, whereas only 38% (n=40) of patients with right sided TT had an orchidectomy $\chi^2(1) = 4.774, p < 0.029$. Conversely the chance of salvaging the right testes is better than the left with an OR of 1.969 (95% CI 1.069-3.626) (Figure 2).

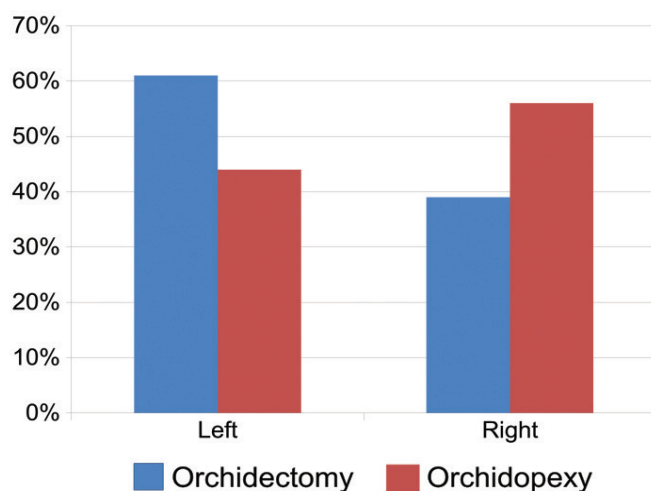


Figure 2: Management of right- and left-sided Testicular Torsion at Salmaniya Medical Complex, Bahrain (2004 to 2017)

The mean age of patients presenting with suspected testicular torsion in our cohort was 20 years (range 11-58 years; mode 15 years). Close to 90% (n=67) of patients who were found to have torsion on exploration had detorsion and bilateral orchidopexy, whereas 7% (n=5) had orchidopexy only on the side of torsion. It was not clear (from the operative notes) whether orchidopexy was done for two

patients. Among patients who had an orchidectomy, 71% (n=77) had fixation of the contralateral testes, whereas no orchidopexy was done for 28% (n=31). Among patients with negative explorations, 62% (n=45) had bilateral orchidopexy, while 28% (n=20) had unilateral exploration and orchidopexy on the same side with no exploration of the other side and only 10% (n=7) of patients were closed without orchidopexy, the proper management (Figure 1).

Discussion

SMC has a high patient load and receives around 900 patients daily. It has 1200 inpatient beds and is the major governmental hospital in the Kingdom of Bahrain. We found the rate of orchidectomy to be high in our cohort of patients, with a 40% testicular salvage rate. Other studies however have found a much higher testicular salvage rate. Studies from the United States, including Cost et al., Zhao et al. and Mansbach et al. have reported a 68%, 58%, and 67% testicular salvage rate respectively.^{5,6,7} In the Far East, an astonishing testicular salvage rate of around 75% was reported by Lee et al, Korea and Huang et al., Taiwan.^{4,9} Cummings et al. studied the testicular salvage rate of cases from 17-20 years and 21-34 years and found the salvage rate was different, with 70.3% of testes salvaged in the younger group versus only 41% in the older group.⁸

It has been well studied and documented that testicular salvage in torsion depends on timely presentation, diagnosis, and surgical intervention. Is the delay in patient management related to late presentation, poor triage and referral or a delay in making the diagnosis and surgical exploration? These questions could not be addressed from the data available to us. Nonetheless, we speculate that just as for other time sensitive diseases, such as stroke and myocardial infarction, efforts to improve outcomes need to focus on public awareness, in order to accelerate patient presentation as well as educate health care providers, to speed up the diagnostic process. Both these measures would translate to an escalation in the testicular salvage rate,¹⁰ and should be especially successful in a small island like Bahrain, where access to secondary health care services are not limited by geographical distance.

The patient's outcome is contingent upon the doctor delivering the appropriate diagnosis in a timely manner. If the testicle was detorted six hours prior to presentation, the testes would be salvaged in up to 90% of patients but this decreases to a salvage rate of less than 10% after 24 hours. To minimize the possibility of orchiectomy for testicular torsion, it is important to improve the education and awareness of both patient and healthcare provider regarding the patients' presentation, diagnosis and surgery.^{5, 11, 12}

Testicular loss is not merely a psychological issue to the young adult. The importance of this issue lies around the correlation between testicular loss, decreased hormonal function, fertility and sperm count. Due to this morbidity, torsion is a sensitive topic, often leading to medical lawsuits.^{13,14} In 90% (n=67) of our patients who were found to have torsion, the testis was salvaged by detorsion and bilateral orchidopexy, the proper course of management in such cases. This was not the case in 7% (n=5) of patients who only had a unilateral orchidopexy. A similar scenario was observed in patients who had an orchidectomy, where 71% (n=77) had fixation of the contralateral testis, whereas in 28% (n=31) no contralateral orchidopexy was done. The surgeon's decision in these cases was not clearly documented and the reason for not performing orchidopexy was not justified. In contrast, among patients with negative explorations, 62% (n=45) had bilateral orchidopexy while 28% (n=20) had unilateral exploration and orchidopexy on the same side and only 10% (n=7) of those patients were closed without orchidopexy, the proper management.

In the literature, several methods have been described that are currently used for fixation of testes in the operative treatment of TT. In a survey conducted by Bolln et al., most surgeons (95%) routinely fixed the contralateral testis. Nonetheless, the method used for fixation remains a matter of personal preference due to the absence of data from comparative trials.^{15,16}

Our study is however limited by incomplete data. Since we could only assess whether these patients underwent surgical detorsion and orchidopexy versus orchidectomy, we do not know the final

outcome of the rate of testicular loss, salvage and/or recurrence after detorsion due to the lack of follow-up. It would be interesting to know the rate of contralateral testicular torsion and compare patients who had orchidopexy to those who did not. Thus, the next step of the authors is to prospectively assess this topic to answer those unresolved questions with purposeful data collection, including long-term follow up of testicular preservation.

Conclusion

Our data reveals that the rate of testicular salvage in our centre is less than that reported elsewhere. We also have inconsistent practices for operative treatment of TT. As time to presentation is the most important factor in predicting outcomes,² more effort should be invested into increasing public awareness about TT in the Kingdom of Bahrain.

Conflict of interests

None to declare.

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