

DEGREE OF TWISTING AND DURATION OF SYMPTOMS IN TESTICULAR TORSION AS A PROGNOSTIC FACTOR IN SALVAGE OF TESTIS – OBSERVATIONAL STUDY

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Received : 22/10/2023
Received in revised form : 30/11/2023
Accepted : 16/12/2023

Keywords:
Testicular torsion, orchidectomy,
degree of torsion.

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DOI: 10.47009/jamp.2023.5.6.269

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 1309-1311



Abstract

Objectives and Methodology: To determine the degree of twisting and duration of symptoms as prognostic factors of testis salvage during episodes of testicular torsion in all male patients who presented to Emergency Department, Paediatrics and Surgical Outpatient clinics, with a diagnosis of an acute scrotum in Sri Manakula Vinayagar Medical College, Puduchery during October 2014 and May 2021. **Results:** A total of 30 patients met the inclusion criteria. Most of the participants had degree of torsion of 360 degrees (50%) followed by 23.3% had 720 degrees, 20% had 540 degrees and 6.7% had 180 degrees. Right side dominance of torsion was seen among the study participants. Around 46.7% of the testis seems to be viable. Most of the study participants had undergone orchietomy (53.3%) followed by 46.7% had orchiopexy. On univariable analysis, duration of symptoms >24hrs (p <0.001) was significantly associated with orchietomy. An ROC analysis was performed and a threshold duration of more than 24 hrs [area under the curve (AUC) 0.91, with 95% confidence intervals (CI): 0.77–1.00] would provide 85.71% sensitivity and 93.75% specificity for the prediction of testicular viability. Also cut off value of 270 degrees [area under the curve (AUC) 0.64, with 95% confidence intervals (CI): 0.43–0.84] would provide a 94% sensitivity and 93% specificity for the prediction of testicular non-salvage. **Conclusion:** The viability of the torsed testis can be determined by the duration of symptoms along with degree of twisting, with >24 hours of symptom duration and 270 degrees of torsion providing 94% sensitivity and 93% specificity for the prediction of testicular non-salvage.

INTRODUCTION

Testicular Torsion is a serious urologic emergency and must be distinguished from other kinds of acute scrotum because a delay in assessment and management can affect the viability of the testicle. A prompt and accurate diagnosis is essential to improve the incidence of salvaged testes.

Aim and Objectives

To determine the viability of the testis in testicular torsion during exploration and correlate with duration of pain and degree of twisting in patients presenting to SMVMCH.

MATERIALS AND METHODS

This is an observational study done between October 2014 and May 2021 in all male patients who

presented to Emergency Department, Paediatrics and Surgical Outpatient clinics, with a diagnosis of an acute scrotum and the purpose of the study is to discover if the degree of torsion (twisting) affects testicular function. It is proposed that a greater number of twists of the spermatic cord will lead to lower salvage rates based on immediate intraoperative findings (orchietomy) and delayed atrophy of the testicle with long-term follow-up. Since the duration of symptoms are not accurate many times, this may be a better predictor for survival of the testis. Degree of twisting cannot be assessed preoperatively, intraoperative degree of twisting is assessed by visual inspection i.e., one full twist is 360 degrees.

RESULTS

A total of 30 patients met the inclusion criteria.

Table 1: Distribution of procedure performed among the study participants (N=30)

SI no	Procedure	Frequency	Percentage
1	Orchiectomy	16	53.3
2	Orchidopexy	14	46.7

Orchiectomy was done in 53% of the cases

Orchidopexy was done in 46% of the cases

Table 2: Distribution of study variables based on the viability of testis (N=30)

SI no	Variable	Viable (n=14)	Not viable (n=16)	X ² (df) P
1	Age	18.71±10.36	21.63±12.92	0.51
2	Duration			19.695 (3) <0.001
	<6 hrs	3 (21.4)	0	
	6-12 hrs	5 (35.7)	0	
	12-24 hrs	4 (28.6)	1 (6.3)	
3	Degree			2.430 (3) 0.54
	180 degrees	1 (7.1)	1 (6.3)	
	360 degrees	9 (64.3)	6 (37.5)	
	540 degrees	2 (14.3)	4 (25)	
4	Side of torsion			0.153 (1) 0.69
	Right	8 (57.1)	8 (50)	
	Left	6 (42.9)	8 (50)	

For Age p value is 0.51

For Duration Chi-square X² is 19.695, Degree of freedom (df) is (3) and p Value is <0.001

For Degree Chi-square X² is 2.430, Degree of freedom (df) is (3) and p Value is 0.54

For Side of torsion Chi-square X² is 0.153, Degree of freedom (df) is (1) and p Value is 0.69

Duration was found to be significantly associated with viability of testis.

Table 3: Association of degree and duration based on the viability of testis (N=30)

Degree of Torsion		Testis Viability				p	
		Yes		No			
180	Duration	<6hrs	0	0	0	0.00%	0.5
		6-12hrs	0	0.00%	0	0.00%	
		12-24hrs	1	100.00%	0	0.00%	
		>24hrs	0	0.00%	1	100.00%	
360	Duration	<6hrs	2	22.20%	0	0.00%	-
		6-12hrs	5	55.60%	0	0.00%	
		12-24hrs	1	11.10%	0	0.00%	
		>24hrs	1	11.10%	6	100.00%	
540	Duration	<6hrs	1	50.00%	0	0.00%	-
		6-12hrs	0	0.00%	0	0.00%	
		12-24hrs	1	50.00%	1	25.00%	
		>24hrs	0	0.00%	3	75.00%	
720	Duration	<6hrs	0	0.00%	0	0.00%	0.28
		6-12hrs	0	0.00%	0	0.00%	
		12-24hrs	1	50.00%	0	0.00%	
		>24hrs	1	50.00%	5	100.00%	

Degree torsion 1 testis viable at 12-24 hrs. At 360-degree torsion 2 testis were viable in less than 6 hrs, 1 at more than 24 hrs, 1 at 12-24 hrs and 5 at 6-12 hrs. At 540-degree torsion 1 viable testis in less than 6 hrs, 1 viable testis 12-24 hrs. At 720-degree torsion 1 testis was viable more than 24 hrs and another 1 at 12-24 hrs.

DISCUSSION

In our study, testicular salvage was possible in 46.7% of the cases; consequently, the orchidectomy was performed in 53.3 % of the cases and it was due to late presentation to ER. However, in our study there are two cases aged 45 and 38 years with 720 degrees and 360 degrees of twisting respectively where the testis were salvaged. It may be due to the reason the person already had previous twisting or may be the twisting was not tight enough to compromise blood supply.

These results are in line with the findings of other studies, in which orchidectomy was done in ~40% of the cases. The decision to perform orchidectomy or orchidopexy was based on the actual condition of the testis after detorsion. It should be noted here that the prediction of long-term viability and spermatogenesis of the affected testis at the time of orchiopexy is extremely difficult due to insufficiently clear effects of ischemia and ischemia/reperfusion injury on the testicular structures.

CONCLUSION

In conclusion, testicular torsion is the most frequent testicular emergency in infants and adolescents that is associated with a high risk of testicular loss or atrophy. Based on the results of our analyses of 30 patients with testicular torsion who underwent surgery, we conclude that the testicular salvage can be predicted by the duration of symptoms along with degree of twisting. We recommended early scrotal exploration based on careful physical examination, which can decrease the risk of testicular loss.

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