

SURGICAL DETORSION FOR TESTICULAR PRESERVATION IN CHILDREN

DR. PHAN NGUYEN NGOC TU
DEPARTMENT OF UROLOGY
CHILDREN'S HOSPITAL N.2



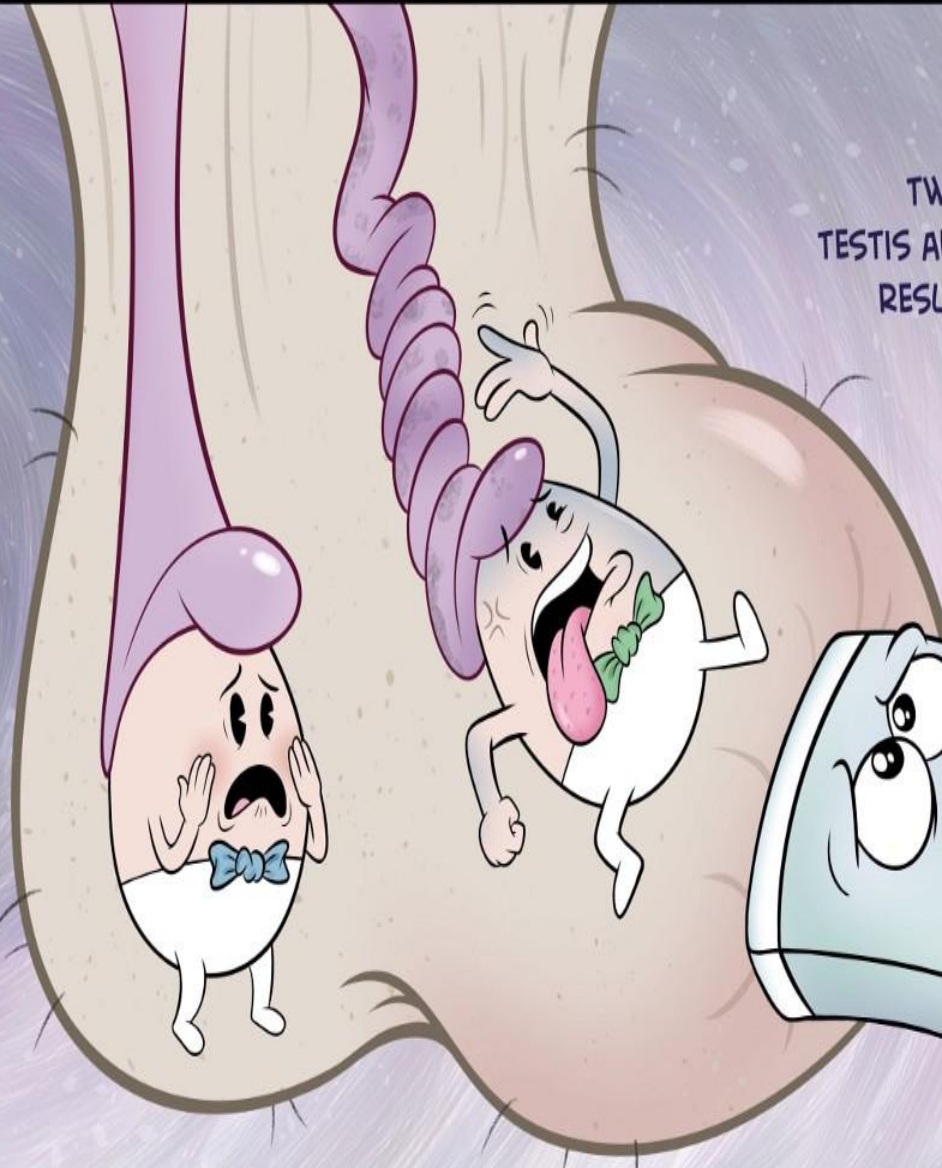
- 1. Introduction
- 2. Diagnosis
- 3. Evidence for Optimal Patient Management
- 4. References



TESTICULAR TORSION

SURGICAL EMERGENCY THAT
REQUIRES INTERVENTION
WITHIN 6 HOURS

TWISTING OF THE
TESTIS AND SPERMATIC CORD
RESULTS IN ISCHEMIA



ACUTE PAIN AND SWELLING

DOPPLER ULTRASOUND
DEMONSTRATES DECREASED
BLOOD FLOW

INTRODUCTION

- Testicular torsion refers to the torsion of the spermatic cord structures and subsequent loss of the blood supply to the ipsilateral testicle.
- This is a urological emergency; early diagnosis and treatment are vital to saving the testicle and preserving future fertility.
- Testicular torsion is primarily a disease of adolescents and neonates. It is the most common cause of testicular loss in these age groups.



Pain “Down There”

Testicles (“balls”) are important:

They make hormones that help guys grow and develop.



They make and store sperm.

Signs of torsion:

- 1 Sudden, strong pain in a testicle
- 2 Swelling and redness
- 3 Feeling sick or throwing up
- 4 Testicle that hurts may be higher than the other
- 5 Pain may go away but come back again

Pain “down there” could be a sign of testicular torsion.



Torsion is when the cord to the testicle twists. This cuts off blood supply.



Most common in guys 12-18

If you have testicular pain:

Go to the ER right away. Doctors can usually fix a torsion within **4 to 6 hours** after pain starts.



Act fast! If you wait too long, the testicle may need to be removed.



TESTICULAR TORSION

- Torsion of spermatic cord
- Strangulation of the blood supply
- Oedema, ischemia
- Fibrosis, atrophy
- Necrosis
- Loss of exocrine and endocrine function



SIGNS AND SYMPTOMS

- **severe acute unilateral scrotal pain**
- scrotal swelling
- Reddening of the scrotal skin
- **Lower abdominal pain, nausea and vomiting**
- **High-riding testicle with an absent cremasteric reflex.**
- Horizontal testicular position.
- Color Doppler Sonography: absence of arterial flow
- **NO FEVER**

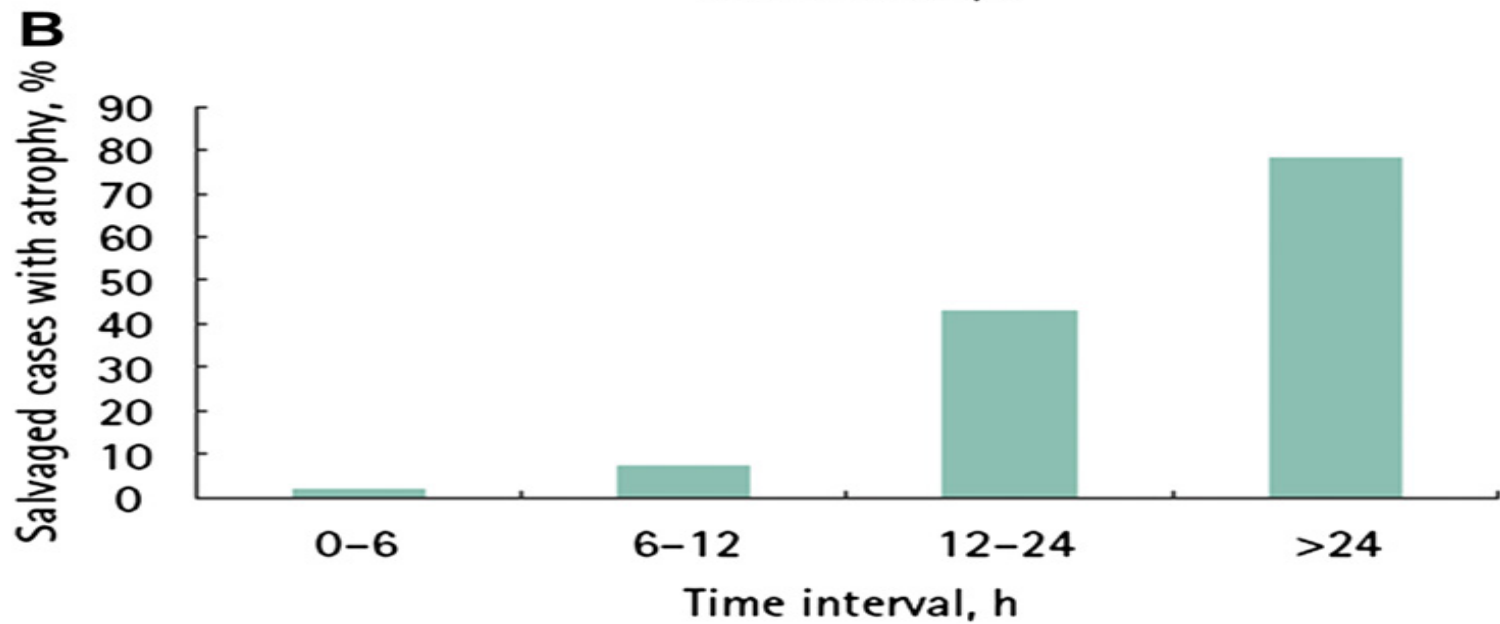
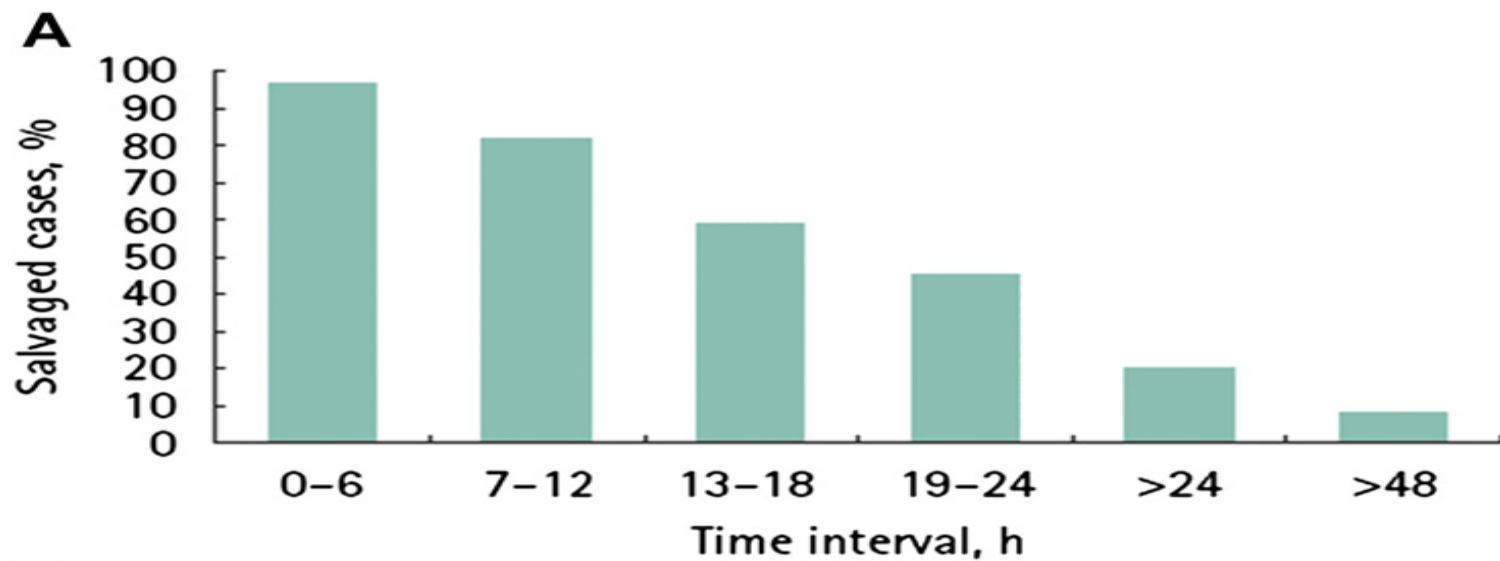




PROGNOSIS

- Degree of torsion
- Duration of torsion
 - Treatment within 3-4 hours is optimal
 - Recovery is possible within 12-24 hours
 - Preservation doubtful after 24 hours
 - Beyond 48 hours orchiectomy is advised
- Taskinen S, Taskinen M, Rintala R. Testicular torsion: orchiectomy or orchiopexy? *J Pediatr Urol.* 2008;4(3):210–213





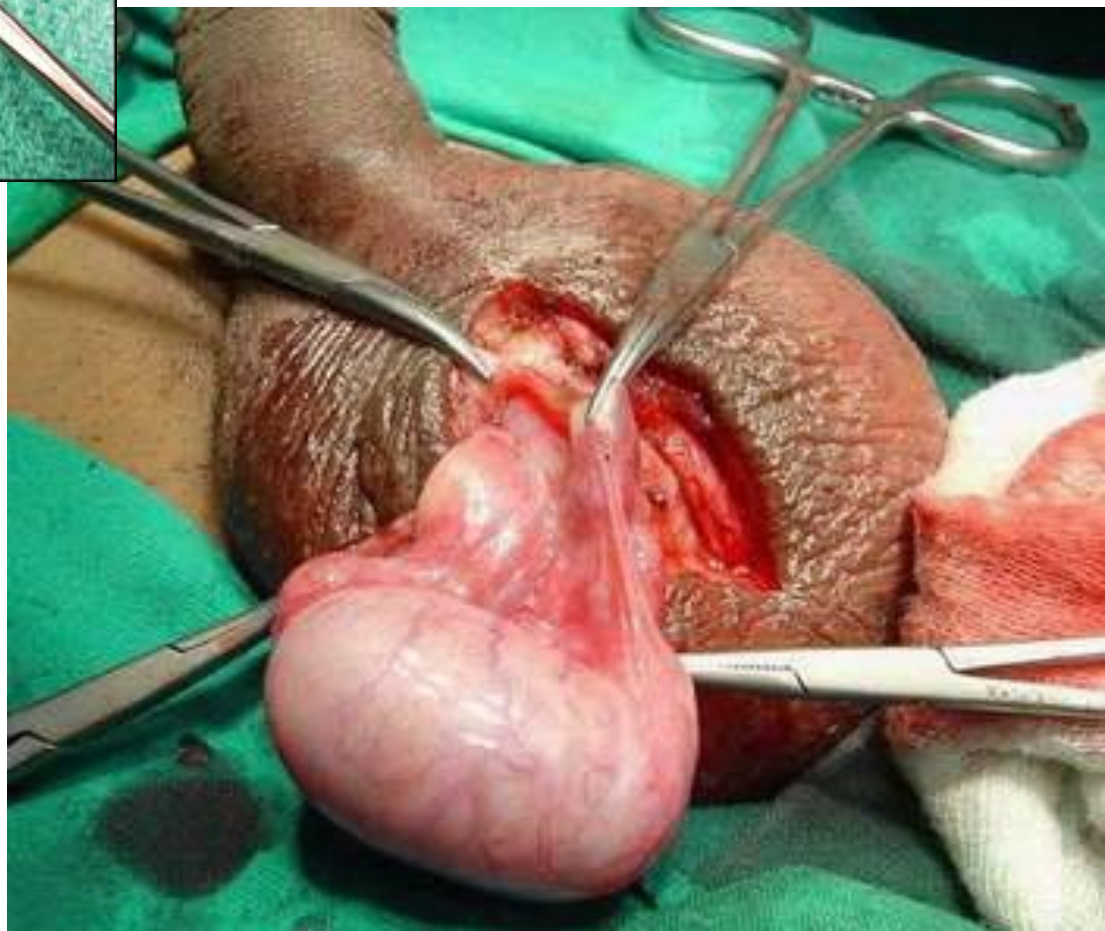
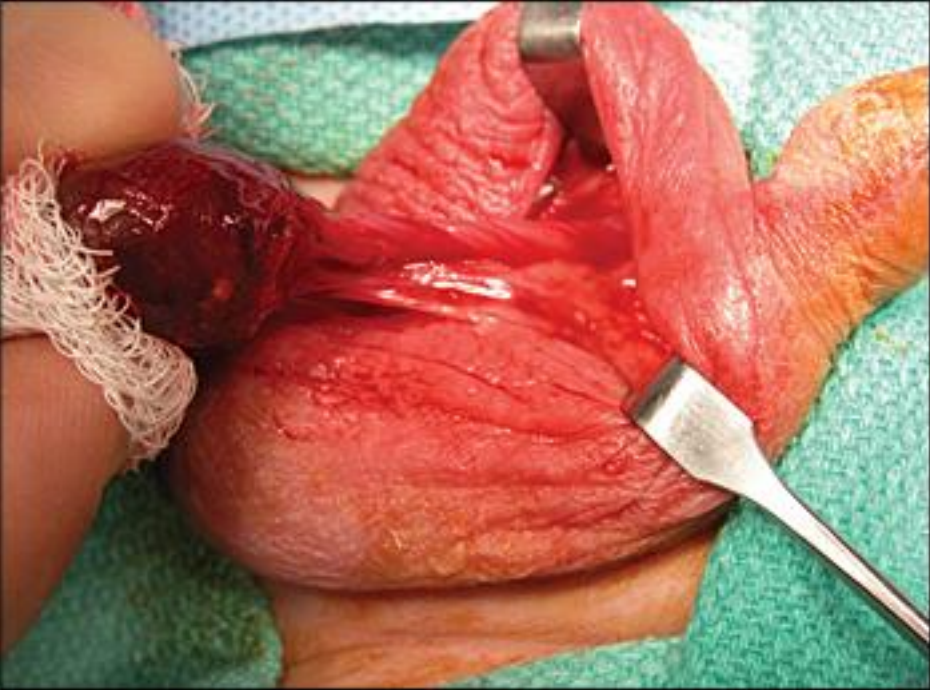
TWO PRIMARY GOALS IN DIAGNOSIS AND MANAGEMENT OF TESTICULAR TORSION:

- **Preserve the ipsilateral testis, when it remains viable.**
- **Prevent contralateral torsion.**



ORCHIECTOMY OR ORCHIOPEXY?







- **Two prospective studies** of young children with testicular torsion (mean ages <12 years) used a similar protocol of **incision through the tunica albuginea ± into parenchyma**, followed by observation for arterial bleeding within 10 min. **Orchiopexy was done in those with bleeding**, with subsequent atrophy **in 17–22 %**.

- *Arda IS, Ozyaylali I. Testicular tissue bleeding as an indicator of gonadal salvageability in testicular torsion surgery. BJU Int. 2001;87(1):89–92.*



A prospective study involved 19 children mean age 9 years (0–13) with testicular torsion in which the tunica albuginea and testicular parenchyma were incised deeply for biopsy and warm sponges applied. The surgeon observed for fresh arterial bleeding for up to 10 min, pecking those with flow ($n=12$) and removing those without. Follow-up was done using color Doppler US at 15 days and 1 year in all undergoing orchiopexy. Atrophy (not defined) was diagnosed in 2/12 (17 %) “after a month of follow-up”

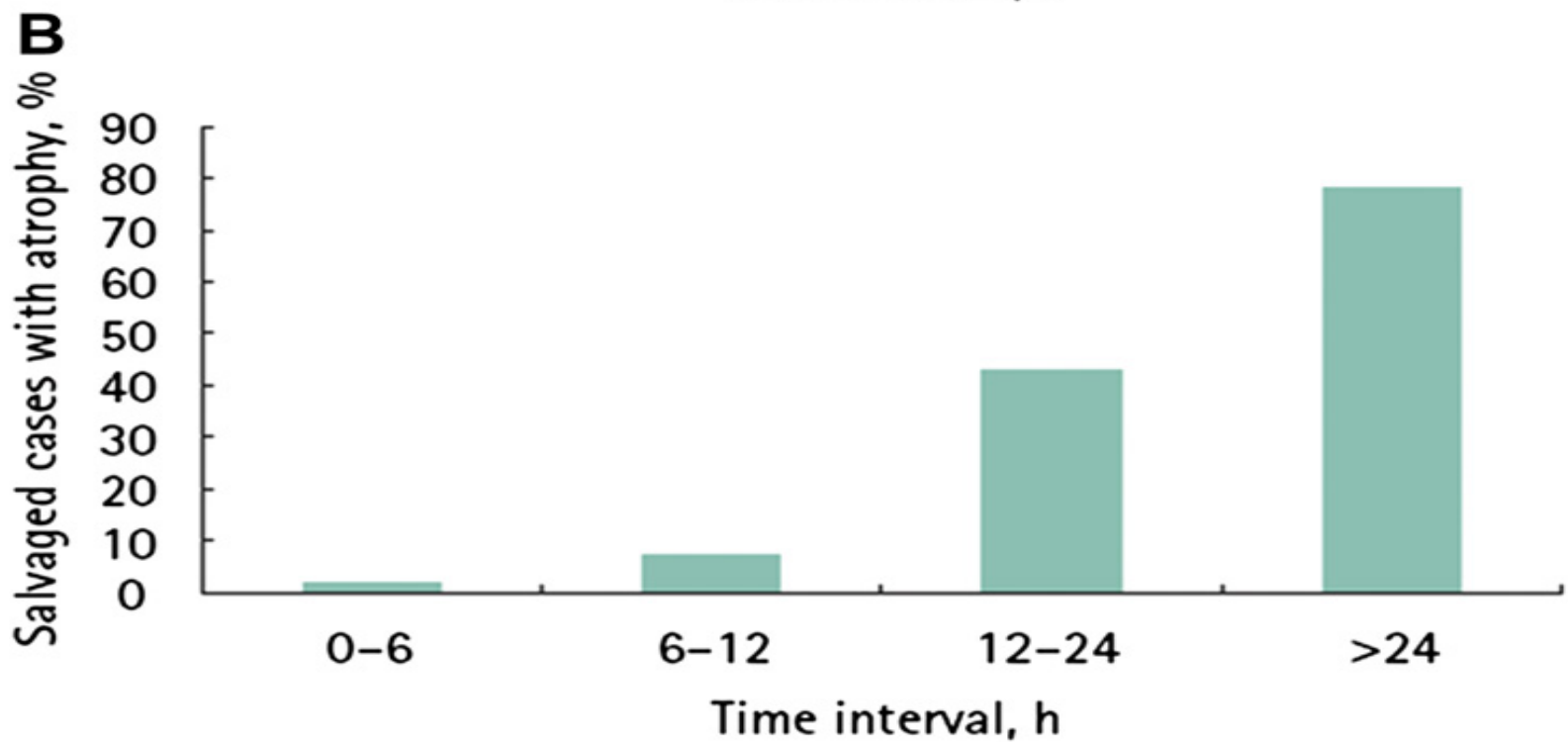
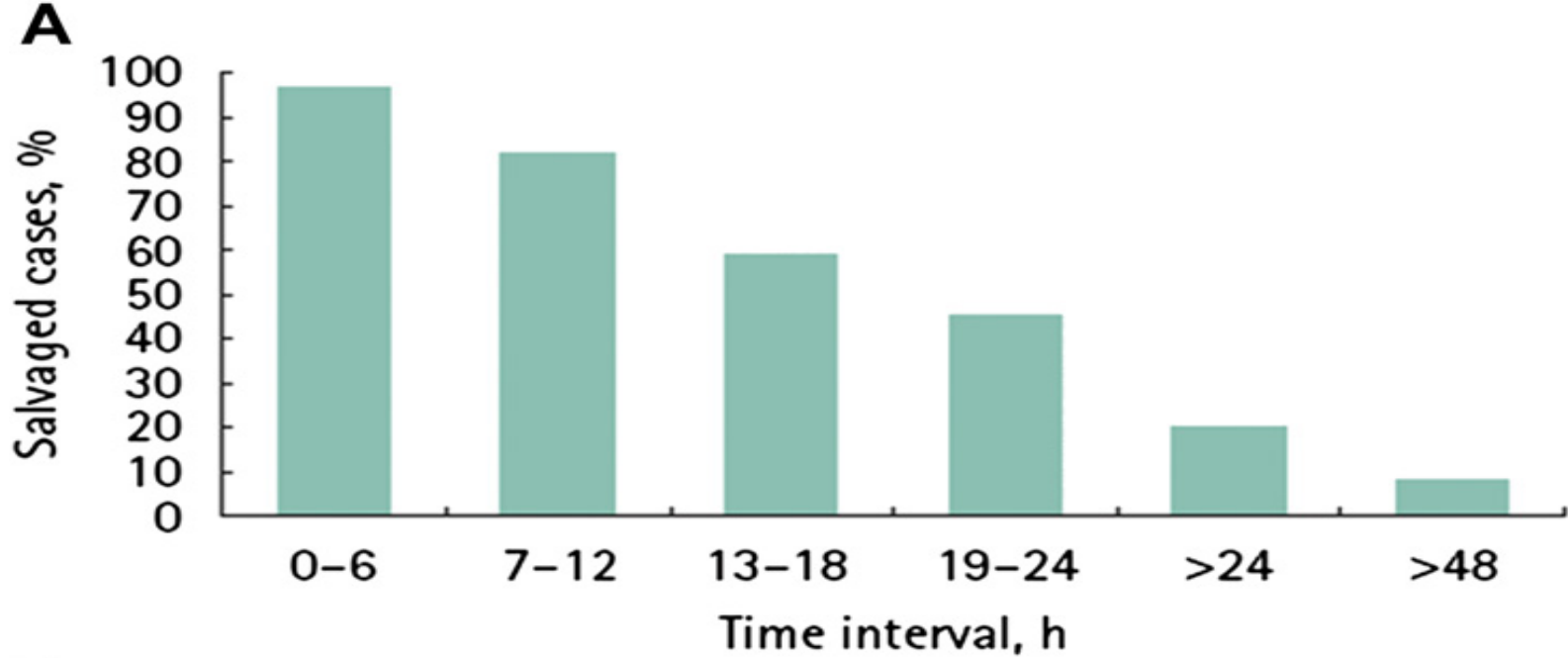
Arda IS, Ozyaylali I. Testicular tissue bleeding as an indicator of gonadal salvageability in testicular torsion surgery. BJU Int. 2001;87(1):89–92



Another **prospective study** reported **15 boys**, median age **8 years** (6–12), with testicular torsion who were operated, each having the tunica albuginea incised followed by observation for arterial bleeding for 10 min. Flow noted within 10 min resulted **in orchiopexy in nine**; using color Doppler US at **follow-up a median of 2.6 years** (0.8–4), **atrophy defined as volume loss of 50 % on the contralateral side** occurred in two (22 %) (Cimador et al. [2007](#)) .

Cimador M, DiPace MR, Castagnetti M, DeGrazia E. Predictors of testicular viability in testicular torsion. J Pediatr Urol. 2007;3(5):387–90.





Thirty-one patients with torsion had mean pain duration of **6 h** (1 h to 7 day), **with orchio- pexy done in 22** (71 %). At follow-up (not clearly stated for torsion patients) one (**5 %**) had atrophy (not defined) (Murphy et al. [2006](#)).

Murphy FL, Fletcher L, Pease P. Early scrotal exploration in all cases is the investigation and intervention of choice in the acute paediatric scrotum. Pediatr Surg Int. 2006;22(5):413–6.



In the study by Figueroa et al. (2012) described in the section above, atrophy occurred in approximately 40 % thought to have “good appearance and color” after detorsion or parenchymal blood flow after tunica albuginea incision.

Figueroa V, Pippi Salle JL, Braga LH, Romao R, Koyle MA, Bagli D, et al. Comparative analysis of detorsion alone versus detorsion and tunica albuginea decompression (fasciotomy) with tunica vaginalis flap coverage in the surgical management of prolonged testicular ischemia. J Urol. 2012;188 Suppl 4Suppl 4:1417–23.



SUMMARY

- Degree of torsion and Duration of torsion
- **Preserve the ipsilateral testis, when it remains viable**
- **Prevent contralateral torsion**
- Patients after testicular torsion may benefit from regular long-term follow-up.
- Further studies are necessary to determine optimal treatment and management of patients after torsion to prevent loss of testicular functions.



REFERENCES

1. EAU Guidelines 2016
2. Turner, T. T. & Brown, K. J. Spermatogenic cord torsion: loss of spermatogenesis despite return of blood flow. *Biol. Reprod.* 49, 401–407 (1993).
3. Tryfonas G, Violaki A, Tsikopoulos G *et al.* Late postoperative results in males treated for testicular torsion during childhood. *J Pediatr Surg* 1994; **29**: 553–6
4. Steinberger, E. & Tjioe, D. Y. Spermatogenesis in rat testis after experimental ischemia. *Fertil. Steril.* 20, 639–649 (1969).
5. Turner, T. T., Lysiak, J. J., Shannon, J. D., Nguyen, Q. A. & Bazemore-Walker, C. R. Testicular torsion alters the presence of specific proteins in the mouse testis as well as the phosphorylation status of specific proteins. *J. Androl.* 27, 285–293 (2006).
6. Taskinen S, Taskinen M, Rintala R. Testicular torsion: orchiectomy or orchiopexy? *J Pediatr Urol.* 2008;4(3):210–213.





If you experience sudden-and-severe pain, go to your doctor.

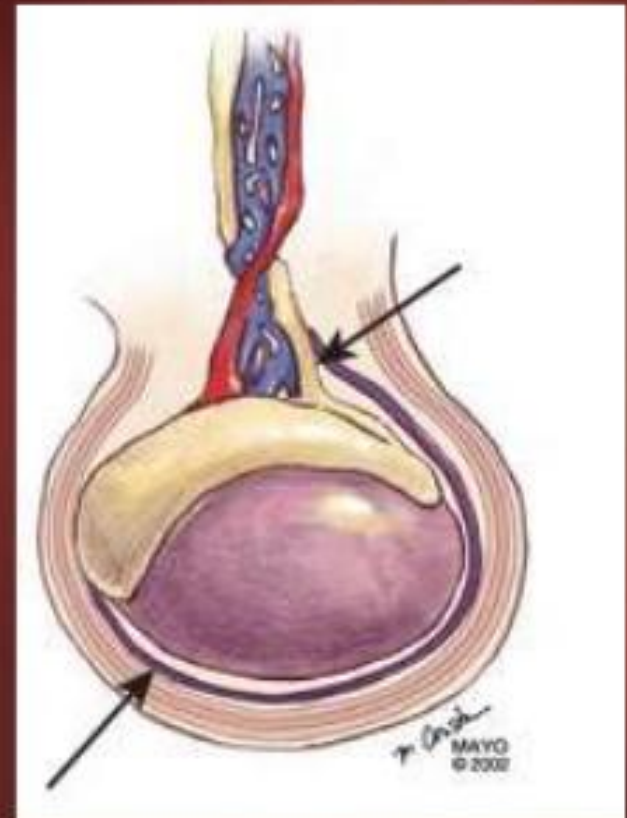
**GO NOW AND
DON'T MESS
ABOUT!**



TWO TYPES OF TESTICULAR TORSION

Extravaginal torsion

- Most often occurs in newborns without the "bell clapper" deformity.
- It is thought to result from a poor or absent attachment of the testis to the scrotal wall, allowing rotation of the testis, epididymis, and tunica vaginalis as a unit and causing torsion of the cord at the level of the external ring

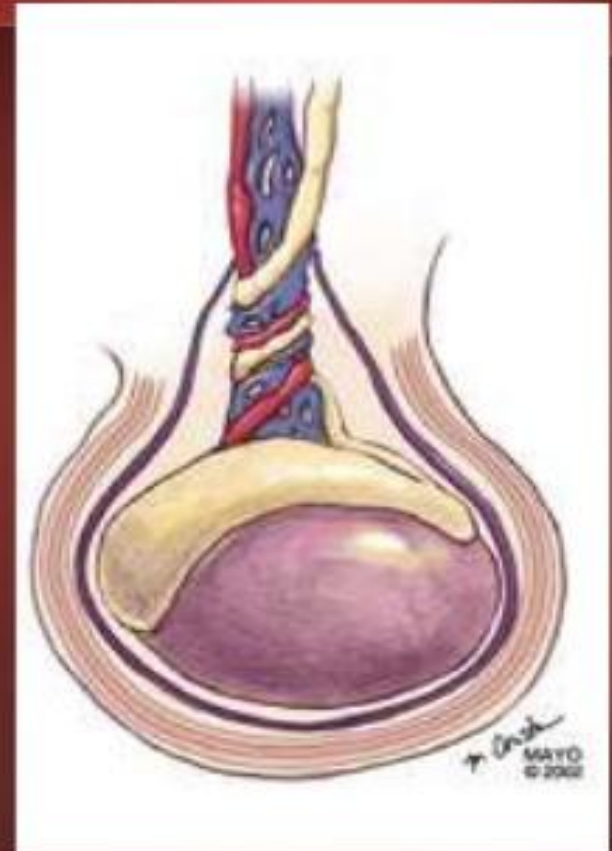


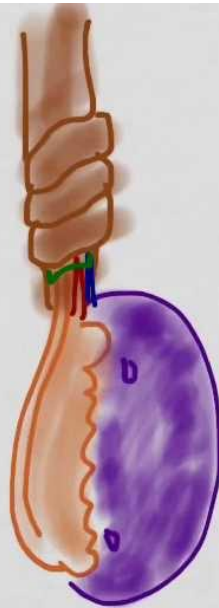
TWO TYPES OF TESTICULAR TORSION

Intravaginal torsion

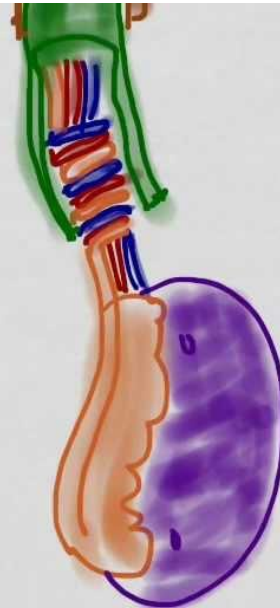
Is the more common type, occurring most frequently at puberty. It results from anomalous suspension of the testis by a long stalk of spermatic cord, resulting in complete investment of the testis and epididymis by the tunica vaginalis.

- This anomaly has been likened to a bell-clapper





Extravaginal
torsion



Intravaginal
torsion

