

PENILE TORSION 135° WITHOUT HYPOSPADIAS: A RARE CASE OF SURGICAL CORRECTION USING PENILE DEGLOVING TECHNIQUE

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ABSTRACT

Background : Penile torsion is a rare condition characterized by a rotational deformity in the shaft of the penis. Penile torsion is divided in 3 categories which are mild, moderate and severe penile torsion. It's a congenital condition that mainly diagnosed in young age and its cause is still unknown.

Case report : An eleven-year-old boy went to a general practitioner clinic for circumcision, from the physical examination was found penile torsion. Then the patient was referred to Urology Departement, with a chief complain of rotated penile shaft counterclockwise. The patient was not in pain, and there was no urinary dysfunction. From the physical examination was found the penile shaft rotated about 135° counterclockwise without hypospadias and chordae. This patient underwent penile reconstructive surgery including penile degloving. After two months, the patient came for check up and found satisfied with the surgical outcome such as the cosmetic appearance.

Conclution : Penile torsion is a rare condition, where proper magamenent and surgery will give a good cosmetic outcome. Degloving is the technique that mainly used, and we hope there will be another technique or device later on to simplify the surgery

Keywords: *Penile torsion, pediatric urology, congenital penile anomaly, reconstructive technique, penile degloving*

INTRODUCTION

Under normal conditions, the penis maintains a straight anatomical structure, with parallel corpora cavernosa, sufficient skin elasticity to prevent excessive traction, and a glans without torsion. Congenital penile anomalies, such as chordee and penile torsion, can occur in males, irrespective of the presence of hypospadias. While the etiology of chordee in patients with hypospadias is well understood, the underlying pathophysiology of chordee and penile torsion in individuals without hypospadias remains unclear.¹

Penile torsion is a congenital malformation characterized by rotational deviation of the corpora cavernosa in either a clockwise or counterclockwise direction. The degree of rotation varies among individuals, and in severe cases, complete inversion of the corpora cavernosa and corpus spongiosum along the ventral and dorsal aspects of the penile shaft may occur. This anomaly may present with or without an ectopic urethral meatus.

The degree of torsion is assessed by measuring the rotational deviation from the urethral meatus to the midline of the scrotum and is classified as mild (5° – 45°), moderate (45° – 90°), or severe ($>90^{\circ}$).²

Most patients with isolated penile torsion do not seek medical attention, as the condition typically does not impair urinary or sexual function. It is often identified incidentally during routine physical examination, although some patients may pursue corrective intervention for cosmetic concerns. The diagnosis of penile torsion is predominantly clinical and can be established through physical examination alone, without the necessity for additional imaging modalities such as penile ultrasonography or magnetic resonance imaging (MRI).²

Currently, no standardized method exists to objectively quantify penile curvature or torsion. Existing techniques lack the capability to provide real-time angular assessments for intraoperative guidance and surgical decision-making. Therefore, the development of standardized imaging modalities utilizing three-dimensional reconstruction or geometric modeling with semi-automated algorithms is warranted to enhance the accuracy of penile angular measurements. Such advancements would be invaluable for urologic surgeons in optimizing surgical planning and assessing postoperative outcomes.²

Several surgical techniques have been described for the correction of penile torsion, including penile degloving, dorsal dartos flap rotation, tunica albuginea plication, fixation of the tunica albuginea to the pubic periosteum, and mobilization of the urethral plate and urethra. However, more complex reconstructive procedures are associated with an increased risk of complications, such as hematoma, hemorrhage, neurovascular bundle injury, and penile shortening.⁵

Penile torsion, similar to curvature and chordee, remains a highly debated condition for which various treatment approaches may be employed. A general consensus beginning with the definition of the pathology is necessary to enable the standardization of management and assessment of outcomes.¹⁰

CASE REPORT

A. Patient Identity

Name : An. X
Sex : Male
Age : 11 years
Weight : 35 kg

B. Anamnesis

1. Chief Complaint : Counterclockwise rotation of the penile shaft.
2. History of Present Illness:

An 11-year-old boy presented to a general practitioner's clinic for circumcision. Upon physical examination, penile torsion was identified. The patient was subsequently referred to the Department of Urology with the chief complaint of counterclockwise rotation of the penile

shaft. The patient did not report any pain or urinary disturbances. Further physical examination revealed a penile shaft rotation of approximately 135° in a counterclockwise direction, without associated hypospadias or chordee (Figure 1).



Fig 1 : Penile Torsion 135°

3. Past Medical History:

- No history of urinary tract infection.
- No history of prior medical procedures or surgeries.

4. Family Medical History:

- No family history of similar complaints.
- No history of genetic or congenital diseases in the family.

C. Physical Examination

1. General Condition: Moderate illness, compos mentis, well-nourished.

2. Vital Signs:

- Blood Pressure: -
- Heart Rate: 110 bpm
- Respiratory Rate: 20 breaths per minute
- Temperature: 36.5°C
- Visual Analog Scale (VAS): -
- SpO₂: 98% on room air

3. Head and Neck Examination:

- Head: Normocephalic
- Eyes: No conjunctival pallor, no scleral icterus, round and isochoric pupils (diameter = 2.5 mm bilaterally), positive pupillary reflexes, no palpebral edema.
- Nose: No septal deviation, no nasal flaring, non-hyperemic mucosa, no rhinorrhea.
- Mouth: No pallor, no cyanosis, no gum bleeding, clean tongue, no pharyngeal hyperemia.

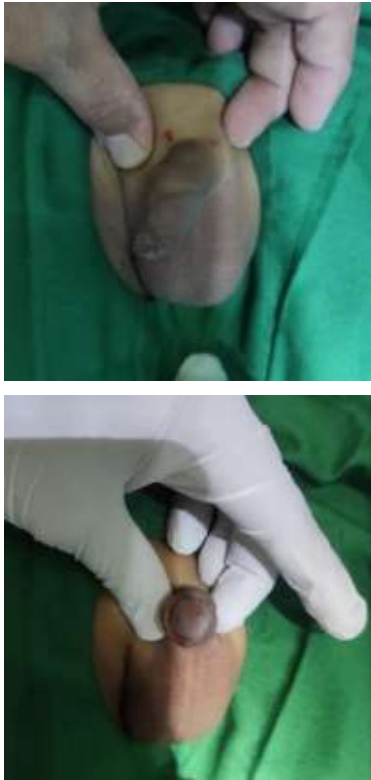
- Ears: Symmetrical, no otorrhea.
 - Neck: JVP +2 cm H₂O, no lymphadenopathy, no thyroid enlargement.
4. Thoracic and Pulmonary Examination:
- Inspection: Symmetrical chest wall movement.
 - Palpation: Symmetrical vocal fremitus, no tenderness, no palpable mass.
 - Percussion: Resonant on both hemithoraxes.
 - Auscultation: Vesicular breath sounds, symmetrical, no rhonchi or wheezing.
5. Cardiac Examination:
- Inspection: Cardiac apex beat visible at the left fifth intercostal space.
 - Palpation: Cardiac apex beat palpable at the left fifth intercostal space.
 - Percussion:
 - Right heart border: fifth intercostal space at the right parasternal line.
 - Left heart border: sixth intercostal space at the left anterior axillary line.
 - Upper heart border: second intercostal space.
 - Auscultation: Regular first and second heart sounds, no murmurs, no gallop rhythm.
6. Abdominal Examination:
- Inspection: Soft, moves with respiration.
 - Auscultation: Normal bowel sounds.
 - Percussion: Tympanic.
 - Palpation: Normal, no tenderness.
7. Extremity Examination:
- Upper Extremities: Warm acral regions, no edema, capillary refill time <2 seconds.
 - Lower Extremities: Warm acral regions, no edema, capillary refill time <2 seconds.
8. Genital Examination:
- **Inspection:**
 - Visible counterclockwise rotation of the penile shaft (135°).
 - Normal prepuce, no phimosis or paraphimosis.
 - Normal urethral meatus, no hypospadias or epispadias.
 - Symmetrical scrotum without swelling, redness, or discoloration.
 - No visible wounds, ulcerations, or signs of infection.
 - **Palpation:**
 - Penis has normal consistency, no palpable mass or tenderness.
 - Testes are bilaterally palpable within the scrotum, normal in size and consistency, non-tender.
 - Epididymis is not enlarged and non-tender.
 - Cremasteric reflex is present bilaterally.
 - No signs of inflammation or trauma in the genital region.

9. Skin Examination : Within normal limits.

D. Diagnosis

1. Working Diagnosis:
 - Severe Penile Torsion (135° Counterclockwise Rotation).
2. Definitive Diagnosis:
 - Congenital Severe Penile Torsion with 135° Counterclockwise Shaft Rotation without Hypospadias or Chordee.

E. Patient Follow-up and Management

Preoperative Management		Before the surgical procedure, the patient was kept fasting and administered intravenous fluid therapy with Ringer's Lactate (RL) at 12 drops per minute. Preoperative prophylaxis with Cefotaxime 500 mg IV twice daily was given.
Intraoperative Procedure		Incision and Degloving • A circumferential incision was made below the coronal sulcus using a scalpel. • The skin and subcutaneous tissue were carefully separated from the tunica albuginea using scissors and blunt dissection down to the base of the penis. • No chordee or other abnormalities were found in the subcutaneous tissue or tunica albuginea. Correction of Penile Torsion • After the skin was detached, manual correction was performed by rotating the penis clockwise to restore its normal anatomical position.

		• Following the correction, the penis remained stable without the need for additional procedures such as plication or a dorsal dartos flap. Repositioning and Skin Suturing • The penile skin was repositioned according to the corrected alignment. • Interrupted suturing of the skin was performed using absorbable 5-0 sutures.
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Postoperative Management	 	The results of the correction were evaluated, showing a symmetrical appearance without excessive skin tension. Postoperative management included Cefotaxime 500 mg IV twice daily and additional analgesia with Paracetamol 350 mg IV three times daily.
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LITERATURE REVIEW

A. Definition

Penile torsion is a congenital anomaly characterized by a spiral rotation of the corpora of the penis, while its proximal portion remains attached to the pubic rami. The exact incidence of penile torsion occurring concurrently with hypospadias remains uncertain due to frequent underdocumentation. Severe congenital penile torsion is rare, with reported degrees of rotation ranging from 15° to 180° in various studies, often accompanied by hypospadias.³

Penile torsion is a structural abnormality involving rotational deviation of the penile shaft, typically in a counterclockwise direction (to the left). The exact etiology of penile torsion remains unclear. The reported incidence of isolated penile torsion varies between 1.7% and 27%, with 0.7% of cases classified as severe torsion.⁵

B. Embryology of the Penis and Urethra

The development of the penis and urethra begins in the early stages of embryogenesis. By the fifth week of gestation, the cloacal membrane, composed of ectoderm and endoderm, is flanked by cloacal folds, which later merge anteriorly to form the genital tubercle. As development progresses, the cloaca divides into two distinct structures: the urogenital sinus anteriorly and the anorectal canal posteriorly. The mesenchymal folds surrounding the urogenital sinus give rise to the urogenital folds, which play a crucial role in further genital development.¹

The primary structures of the penis, including the corpus cavernosum, connective tissue, and dermis, originate from mesodermal cells. The penile surface, on the other hand, is covered by ectoderm-derived skin. Mesenchymal differentiation during penile development is thought to be influenced by epithelial-mesenchymal interactions. Studies on human fetuses have shown that ventral curvature is a physiologic condition at 16 weeks of gestation and gradually resolves between 20 and 25 weeks.¹

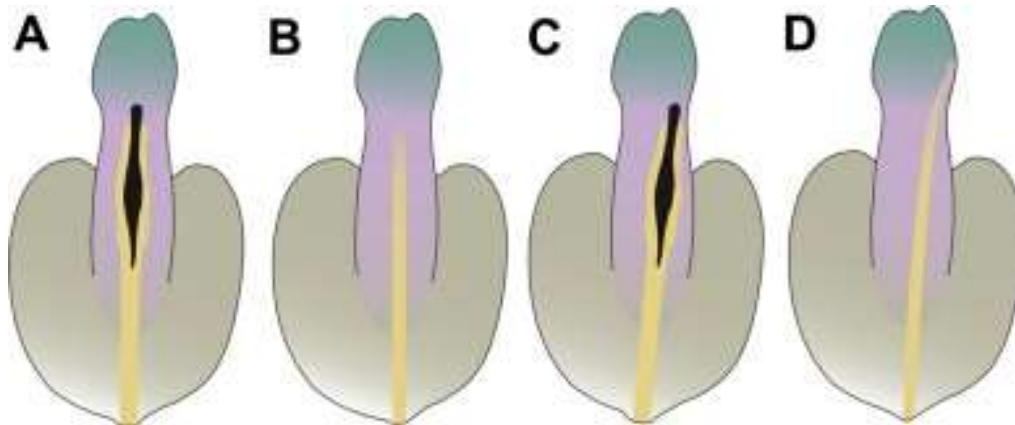
Neurovascular Anatomy of the Penis

Recent studies have provided further insight into the neurovascular anatomy of the penis. The primary nerve supply originates beneath the pubic rami, positioned superior and lateral to the urethra, in the form of two distinct nerve bundles. These nerves extend toward the glans penis and disperse around the corpora cavernosa, reaching the junction with the corpus spongiosum.¹

The midline dorsal aspect of the penile shaft lacks neural tissue, distinguishing it from other regions. Additionally, this area contains the thickest and strongest portion of the tunica albuginea compared to other penile structures. These significant structural variations suggest a role in mechanical function and neural responsiveness.¹

C. Embryopathology

The embryopathology of congenital penile torsion involves several developmental stages, as follows:



Taghavi, K., Upadhyay, V., & Mirjalili, S. A. (2013). Familial isolated congenital penile torsion. *Journal of Pediatric Surgery Case Reports*, 1(8), 239-240. <https://doi.org/10.1016/j.epsc.2013.06.003>

(A) By the 10th week of development, the urethral folds begin to develop and bridge the urethral groove up to the point just before reaching the glans. (B) Toward the end of the third month, fusion occurs between the endoderm and ectoderm along the midline raphe. (C) and (D) illustrate asymmetric development of the urethral folds, where fusion occurring off the midline results in the formation of Congenital Penile Torsion. For further understanding of the color references in this illustration, readers may refer to the online version of the article.⁸

D. Epidemiology

Penile curvature abnormalities encompass various morphological disorders, most commonly associated with hypospadias, although they may also occur in males with a normal urethral meatus. Generally, hypospadias has an incidence of approximately 1 in 300 live births, with about 25% of cases presenting with chordee. In the United States, the Birth Defects Monitoring Program (BDMP) has recorded an increasing incidence of hypospadias since the 1970s, doubling to approximately 4 per 1,000 live births by 1993.¹

However, chordee is not exclusive to individuals with hypospadias and can also be identified in boys diagnosed only after complete retraction of the prepuce. This suggests that the actual incidence of chordee may be higher, estimated at 4–10% of all male births.¹

Penile torsion represents another form of penile curvature abnormality, which may be congenital or acquired following circumcision. It results from a rotational defect in the penile shaft, most commonly rotating counterclockwise.¹ While penile torsion is frequently associated with hypospadias, some cases indicate that it can occur as an isolated anomaly without concurrent hypospadias. However, reports on penile torsion remain limited, with the largest study documenting only 46 cases over six years. To date, the exact incidence of this condition remains unclear.¹

E. Etiology

The precise etiology of penile torsion remains unknown. Some studies suggest that potential causes include asymmetric growth of the corpora cavernosa and abnormalities in the attachment of the skin and dartos fascia during development. However, these theories do not fully explain why penile torsion predominantly occurs in a counterclockwise direction.⁴

According to various literature sources, the exact cause of penile torsion remains poorly understood and is still a topic of debate. Research, including that by Hussein et al., suggests that anomalies in the attachment of the skin and dartos fascia may contribute to the development of penile torsion. Additionally, other structures, such as Buck's fascia, the corpora cavernosa, and the tunica albuginea, have been proposed as contributing factors.⁶

A more recent theory proposed by Bhat et al. suggests that penile torsion may result from incomplete fusion of the endodermal and/or ectodermal urethral folds.⁷

F. Pathomechanism

The exact pathomechanism underlying penile torsion remains unclear. Some theories suggest that abnormalities in the dartos fascia and Buck's fascia play a key role in its development.³

G. Management

Various surgical techniques have been developed to correct penile torsion, including dorsal dartos fascia rotation, diagonal plication of the corpora, suture fixation to the pubic periosteum, plication suturing techniques, mobilization of the urethral plate and urethra, and penile degloving with reattachment.³

Penile reconstruction is typically performed for two main reasons: cosmetic improvement and functional correction. Although most cases are asymptomatic, many parents opt for surgical correction for aesthetic reasons. Approximately 60% of patients with penile torsion undergo surgery primarily for cosmetic concerns.⁴

A stepwise approach to penile torsion correction allows for the use of simpler techniques first, reducing the risk of complications associated with more complex procedures.⁹ The correction process considers the severity of torsion, starting with degloving and skin repositioning, followed by dorsal dartos flap application, and, if necessary, corporopexy. At each stage, artificial erection testing is performed to assess the correction outcome. If the torsion is resolved, further procedures are not required.⁹

A study by Elbatarny, A. M., et al. reported that over four years, 25 cases of penile torsion with rotational angles ranging from 30° to 180° were successfully corrected. Three cases were managed with degloving alone, 12 cases with degloving and skin repositioning, five cases required a dartos flap, and four cases necessitated corporopexy. Postoperative complications included penile edema in five

patients, hematoma in one patient, and dorsal skin gangrene in one case. Three patients had mild residual torsion ($<15^\circ$), but none required reoperation.⁹

This stepwise approach is effective for penile torsion correction, starting with simple techniques and progressing as needed, avoiding unnecessary complex procedures.⁹

DISCUSSION AND CONCLUSION

A. Patient Summary

An 11-year-old male patient presented to a general practitioner's clinic for circumcision. However, upon physical examination, a penile torsion with a 135° counterclockwise rotation was identified. No other congenital abnormalities, such as hypospadias or chordee, were observed, and the patient did not experience pain or urinary disturbances. Based on the classification criteria, this case was categorized as severe penile torsion ($>90^\circ$), requiring surgical correction to achieve optimal cosmetic and functional outcomes.

Penile torsion is a rare congenital anomaly with an incompletely understood pathophysiology. However, various studies, including research published in the *Journal of Pediatric Urology* by Elbatarny and Ismail (2014), have demonstrated that penile torsion can be corrected using multiple surgical techniques. This study emphasizes that less invasive methods, such as penile degloving, are often sufficient to correct the deformity without necessitating more complex surgical approaches.

In this patient, penile degloving was performed without the need for urethral mobilization or chordee correction. This technique involved a circumferential incision below the coronal sulcus, dissection of the skin from the tunica albuginea, and anatomical realignment of the penile shaft, followed by fixation and suturing. This approach aligns with the method described by Elbatarny and Ismail (2014), which demonstrated favorable cosmetic outcomes with minimal complications.

A postoperative evaluation at two months showed satisfactory results, with no complications such as persistent edema, tissue necrosis, or urinary dysfunction. These findings support the literature, indicating that penile torsion correction using the penile degloving technique is an effective approach, particularly in cases without associated hypospadias or chordee.

B. Conclusion

Penile torsion is a rare congenital anomaly that may impact the patient's aesthetics and psychological well-being, although it typically does not cause functional impairment. The diagnosis is established through physical examination, and the severity of the condition determines the appropriate management approach.

In this case, surgical correction using the penile degloving technique proved effective in restoring the anatomical position of the penis while achieving satisfactory cosmetic results. Recent literature,

including the study by Elbatarny and Ismail (2014), supports the efficacy of this technique, often eliminating the need for additional procedures. Therefore, penile degloving remains a primary technique for correcting penile torsion, and further research is warranted to explore methods that may simplify this procedure in the future.

REFERENCES

1. Montag, S., & Palmer, L. S. (2011). Abnormalities of penile curvature: Chordee and penile torsion. *The Scientific World Journal*, 11, 1470–1478. <https://doi.org/10.1100/tsw.2011.136>
2. Alzahrani, A., Al-Sharydah, A., Alkhamis, A., Alarifi, M., AlMomen, M., Alwarthan, A., & Aldamanhori, R. (2023). Severe penile torsion of 180 degrees in an adult patient: A uro-radiological case report. *Journal of Medicine and Life*, 16(10), 1566–1572. <https://doi.org/10.25122/jml-2023-0113>
3. Cassell, A., Jalloh, M., Mbodji, M. M., Ndoye, M., Labou, I., Niang, L., Diallo, Y., Diallo, A., & Gueye, S. M. (2019). 180° congenital penile torsion with distal hypospadias mistaken for an epispadias: Optimal outcome with tubularized incised plate urethroplasty and dartos flap rotation. *IJU Case Reports*, 2(6), 324–326. <https://doi.org/10.1002/iju5.12120>
4. Putra, F. A. R., Daryanto, B., & Nurhadi, P. (2024). Penile torsion of a two-year-old boy: A case report. *Indonesian Journal of Urology*, 31(1), 51–54.
5. Soebhali, B., Arissaputra, S., & Anugerah, A. (2018). **Torsio penis derajat berat tanpa penyulit.** *Jurnal Kedokteran Mulawarman*, 6(3).
6. Hussein, A., Naguib, I., & Wilson, A. M. (2007). Penile degloving and skin reattachment technique for repair of penile torsion. *Journal of Plastic and Reconstructive Surgery*, 31, 19–23.
7. Bhat A, et al. The Incidence of Isolated Penile Torsion in North India: A study of 5018 male neonates. *J Ped Urol* 2017.
8. Taghavi, K., Upadhyay, V., & Mirjalili, S. A. (2013). Familial isolated congenital penile torsion. *Journal of Pediatric Surgery Case Reports*, 1(8), 239-240. <https://doi.org/10.1016/j.epsc.2013.06.003>
9. Elbatarny, A. M., & Ismail, K. A. (2014). Penile torsion repair in children following a ladder step: Simpler steps are usually sufficient. *Journal of Pediatric Urology*, 10(6), 1187–1192. <https://doi.org/10.1016/j.jpuro.2014.07.020>
10. Fahmy, M., Hoebeke, P., & Spinoit, A.-F. (2017). Penile rotation. In *Congenital anomalies of the penis* (Chapter 12). Springer International Publishing. https://doi.org/10.1007/978-3-319-43310-3_12