Penile degloving and dorsal dartos flap rotation approach for the management of isolated penile torsion

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ABSTRACT

Objective: Penile torsion is a counterclockwise rotational anomaly of the penile shaft or glans. We aimed to evaluate the outcomes of penile degloving and dorsal dartos flap rotation used for the repair of isolated penile torsion.

Material and methods: During evaluation of the patients admitted to our polyclinic for circumcision between January 2013-December 2014, 5 cases of isolated penile torsion were determined. Following the circumcision procedure performed with bipolar cautery, patients undergoing penile degloving were checked whether penile torsion was relieved or not. In case of insufficient improvement, torsion was corrected with application of dorsal dartos flap. Penile torsion was corrected with dartos flap in 2, and penile degloving in 3 cases.

Results: The mean age of the patients was 5.6 years (4-7), and the mean operative time 12 minutes (7-20), respectively. The mean operation time was 17.5 (15-20) minutes and 8.3 (7-10) minutes in the dorsal dartos flap and penile degloving groups, respectively. The preoperative mean degree of penile torsion was 50° (30°-70°). The mean degree of torsion was 65° and 40° in the dorsal dartos and penile degloving groups, respectively. During the postoperative follow up, 1 case of residual torsion (<10°) was observed in the dorsal dartos flap group. Residual torsion was not observed in other patients.

Conclusion: Exploration for isolated cases of penile torsion during the circumcision procedure should not be overlooked. Successful results can be obtained with penile degloving and dartos flap rotation in cases with low and moderate torsion.

Keywords: Dorsal dartos flap; penile degloving; penile torsion

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Introduction

Generally counterclockwise rotation of the penile shaft is called penile torsion. It is usually observed in association with hypospadias, and chordee, rarely it can be observed as an isolated entity. Its actual incidence is not known certainly. Various studies reported its incidence ranging between 1.7, and 27%, while incidence of severe torsion was indicated as 0.7 percent.^[1,2] In our study we aimed to present data related to isolated penile torsion among patients applied to our clinic for circumcision.

Material and methods

Five cases with isolated penile torsion were detected among patients consulted to our

outpatient clinics for circumcision between January 2013, and December 2014. During examination of external genitalia preliminary evaluation was performed based on the course of median raphe on penile corpora, and glans (Figure 1). Before initiation of the procedure, informed consent forms were obtained from the families of the patients. Patients whose penile torsions were lower than 45° were also included in the study for cosmetic reasons in line with the requests of their families. Under general anesthesia, and penile block, preputial adhesions were liberated, and the presence, and degree of the glanular torsion were controlled (Figure 2). Following circumcision performed by using bipolar cautery, penile skin was degloved from the circumcision line down to the penile base. With a tourniquet

placed around the penile shaft artificial erection was formed, and degree of correction of the penile torsion was controlled. An additional procedure was not performed for the patients whose penile torsion was corrected. In patients whose penile torsion was not adequately corrected, dorsal dartos flap was prepared from the right side of the penile shaft. This flap was sutured to the penile shaft with 3.0 vicryl sutures so as to achieve clockwise rotation of the penile shaft (Figure 3, 4). Following hemostatic control, layers were properly closed, and state of residual torsion was evaluated (Figure 5). Penile detorsion was achieved with dartos flap in 2, and penile gloving in 3 cases. After the operation compressed dressings were applied with elastic bandage, and the patients were discharged. Then removal of this bandage the next day was requested from the patients. Starting from the post-operative 2. day, the patients were called back for routine daily controls. The process of wound site healing was monitored. At postoperative controls residual torsions below 10° were considered as successful outcomes. The patients were called back for control visits at 1., and 3. postoperative months. The recorded data were retrospectively evaluated.

Results

Mean age of the patients was 5.6 (4-7) years. Mean operative times were 12 (7-20) min. Mean operative times in cases (n=2) with dorsal dartos flap, and penile degloving (n=3) were 175 (5-20) min, and 8.3 (7-10) min, respectively. Preoperative mean penile torsion was 50° (30°-70°). Postoperative mean penile torsion was 65°, and 40° in patients who underwent dorsal dartos flap, and only penile degloving, respectively. During postoperative monitorization residual torsion of less than 10° was observed in one case. Residual torsion was not observed in other patients. Postoperative complication was not also observed in any patient (Table 1). Any recurrence was not detected at post-operative 1st, and 3rd month controls.

Discussion

A clear-cut consensus does not exist as for the incidence of penile torsion which develops as an outcome of counterclockwise rotation of the penile shaft. Sarkis et al.^[2] had observed glanular penile torsion in 27.02% of the newborns during the neonatal period. Eighty-seven percent of these cases had consisted of patients with penile torsion between 10°, and 20°. Limited number of data have been gathered from assessments of penile torsion in the adult population. In a study performed, 11,000 adult patients with sexual dysfunction and/or infertility were evaluated, and in 12% of them penile torsion was detected.^[3] In this study the authors reported that 80% of their patients had penile torsion less than 30°, while

Table 1. Some characteristic demographic features of the patients

	Age N (years)	Degree of the torsion	Operation technique	Operative time (min)	Residual torsion
1	6	45	Penil degloving	8	-
2	5	70	Dartos flap rotation	20	<10°
3	6	60	Dartos flap rotation	15	-
4	7	45	Penil degloving	10	-
5	4	30	Penil degloving	7	-

Figure 1. Course of median raphe on penile shaft, and glans penis

Figure 2. Glanular torsion following separation of preputial adhesions

Figure 3. Preparation of dorsal dartos flap from the right side of the penis

Figure 4. Clockwise rotation of the penile shaft

Figure 5. After correction of the penile torsion

in only 2% of them surgical indication for correction existed because of cosmetic concerns. Besides none of their patients had complained of sexual dysfunction related to penile torsion. However even in cases with lower degrees of penile torsion, corrective surgery has been performed if requested by the families of these patients for cosmetic concerns. We also have taken opinions of the families into consideration during our decision making process.

Although the etiology of penile torsion is not known for sure, various hypotheses have been suggested. Abnormal fusion of endodermal and/or ectodermal folds has been asserted, however some authors have related this entity to developmental defect of penile fascia. As a justification of their hypothesis, penile torsion was attributed to an abnormality of Buck's fascia, and the authors reported that only degloving can not achieve detorsion.^[4,5] Also in our study in two cases since penile degloving did not achieve adequate detorsioning, we applied dorsal dartos flap rotation surgery.

A clear-cut consensus does not exist for the surgical treatment of penile torsion. Many methods have been described in the literature. Some of the methods described include penile degloving^[6], dorsal dartos rotation^[7], suturing of pubic periosteum^[8], urethral mobilization^[9] and untwisting plication sutures.^[10] Slawin and Nagler^[11] reported excision of ellipsoid corporal tissue, and plication in the treatment of severe penile torsion. Snow^[12] described diagonal corporal plication sutures. These surgical techniques carry potential risks of bleeding, neurovascular injury, and penile shortening. In a study where dorsal flap rotation was compared with pubic periosteal suturing techniques, it was reported that both techniques had been found to be successful as detorsioning procedures, while preparation of dartos flap was indicated as a relatively easy and time-sparing method.^[13] In our study we performed penile degloving, and dorsal dartos flap rotation techniques on our patients. In limited number of our patients penile degloving was an adequate technique for patients with penile torsions less than 45°, while in moderate degrees of torsion, rotation of penile dorsal flap yielded satisfactory results. Since we were accustomed to the preparation of dartos flap during our hypospadias repair procedures in addition to ease of application of this complication-free technique when compared with other techniques, we preferred this technique.

Since only cases with isolated penile torsion were included in our study, our study had scarce number of cases. Thanks to use of bipolar cautery which obviated long time consuming procedures our operative times were relatively shorter. Our series of isolated penile torsion did not contain any case with serious

penile torsion, so we couldn't evaluate the outcomes of dartos flap application in this patient group.

In conclusion, during prevalently used circumcision isolated penile torsion should not be overlooked. In line with the support of the families, in low, and moderate grade torsions, penile degloving, and dartos flap rotation seem to yield successful outcomes.

Ethics Committee Approval: This study was conducted retrospectively therefore Ethical committee approval was not received.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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References

1. Ben Ari J, Merlob P, Mimouni F, Reisner SH. Characteristics of male genitalia in the new born. *J Urol* 1985;134:521-2.
2. Sarkis PE, Sadasivam M. Incidence and predictive factors of isolated neonatal penile glanular torsion. *J Pediatr Urol* 2007;3:495-9. [\[CrossRef\]](#)
3. Shaeer, O. Torsion of the penis in adults: prevalence and surgical correction. *J Sex Med* 2008;5:735-9. [\[CrossRef\]](#)
4. Bhat A, Bhat MP, Saxena G. Correction of penile torsion by mobilization of urethral plate and urethra. *J Pediatr Urol* 2009;5:451-7. [\[CrossRef\]](#)
5. Bauer R, Kogan BA. Modern technique for penile torsion repair. *J Urol* 2009;182:286-91. [\[CrossRef\]](#)
6. Abou Zeid A, Soliman H. Penile torsion: an overlooked anomaly with distal hypospadias. *Ann Pediatr Surg* 2010;6:93-7.
7. Fisher PC, Mark JM. Penile torsion repair using dorsal dartos flap rotation. *J Urol* 2004;109:1903-4.
8. Zhou L, Mei H, Hwang AH, Xie HW, Hardy BE. Penile torsion repair by suturing tunica albuginea to the pubic periosteum. *J Pediatr Surg* 2006;41:7-9. [\[CrossRef\]](#)
9. Bhat A, Sabharwal K, Bhat M, Saran R, Singla M, Kumar V. Outcome of tubularized incised plate urethroplasty with spongioplasty alone as additional tissue cover: A prospective study. *Indian J Urol* 2014;30:392-7. [\[CrossRef\]](#)
10. Hsieh JT, Wong WY, Chen J, Chang HJ, Liu SP. Congenital isolated penile torsion in adults: untwist with plication. *Urology* 2002;59:438-40. [\[CrossRef\]](#)

11. Slawin KM, Nagler HM. Treatment of congenital penil curvature with penile torsion: a new twist. *J Urol* 1992;147:152-4.
12. Snow BW. Penile torsion correction by diagonal corporal plication sutures. *Int Braz J Urol* 2009;35:56-9. [\[CrossRef\]](#)
13. Aldaqadossi HA, Elgamal SA, Seif Elnasr MK. Dorsal dartos flap rotation versus suturing tunica albuginea to the pubic periosteum for correction of penile torsion: a prospective randomized study. *J Pediatr Urol* 2013;9:643-7. [\[CrossRef\]](#)