

# A rare complication after inguinal hernia repair: testicular torsion

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## ABSTRACT

Testicular torsion is the most common urological emergency characterized by reduced blood flow of the testis, often due to spermatic cord torsion occurring in adolescence. A 68-year-old male patient admitted our hospital emergency service with the complaint of acute scrotal pain for a week. On history, he had undergone right inguinal hernia repair with synthetic mesh one week ago. Due to reduced blood flow of right testicular artery on colored doppler ultrasonography, emergent surgery was performed. On intraoperative examination, 360 degree torsion of spermatic cord from distal to the mesh, thrombosis of right testicular artery and necrosis of testicular tissue was observed. After detorsion of right testis, absence of blood supply to the right testis was observed. According to these findings, right inguinal orchiectomy was performed. It should be kept in mind that persistent pain may be a sign of testicular torsion which may develop early after inguinal hernia repair with synthetic polypropylene mesh. In suspicious of testicular torsion because of persistent scrotal pain after inguinal surgery, scrotal colored doppler ultrasonography must be performed immediately and consulted to the urologist. Succeed results may be provided by multidisciplinary approach and early treatment.

**Keywords:** Orchiectomy, testicular torsion, inguinal hernia repair, synthetic polypropylene mesh

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**T**esticular torsion is a common surgical emergency among adolescents and adults characterized by a decrease in testicular blood flow which is often occurs due to torsion of spermatic cord. It is one of the most common urological problems in patients admitting to emergency service presenting with acute scrotal pain. There are three types of torsion; extravaginal, intravaginal and torsion of testis appendicularis. Scrotal pain spreading to the lower quadrant of the abdomen may cause symptoms such as nausea and vomiting. The etiology of testicular torsion is mostly idiopathic, and 20% can be traumatic. In one study, the incidence of testicular torsion was

reported as 3.5/100 000 [1]. Although, the risk of encountering inguinal hernia throughout life in men is reported as 27%, it is 3% for women. It is thought that about 20 million hernia repair is performed every year in the world [2].

In case of inguinal hernia repair with synthetic mesh techniques the spermatic cord is potentially affected by chronic inflammatory tissue remodeling that may impair testicular perfusion inducing acute scrotum [3]. Previous studies demonstrated that mesh repair procedure may induce inflammatory response that cause to the encasement of spermatic cord by scar tissue. Although testicular perfusion is not



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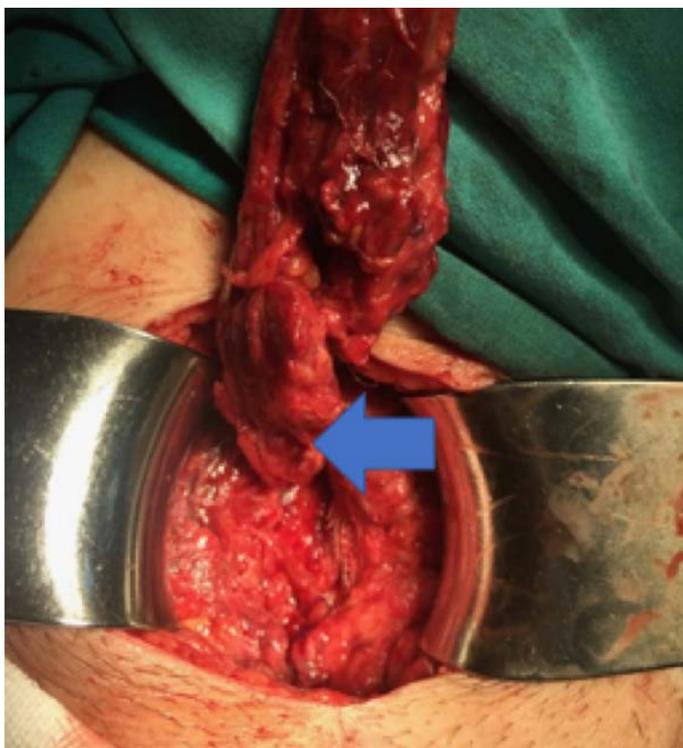
compromised in most of cases, in some cases, a concomitant inflammatory process may impair the blood supply leading to acute scrotum [4, 5]. Testicular torsion causing acute scrotum after inguinal hernia repair is a very rare condition. In our case report, we aimed to present a case of early testicular torsion after inguinal hernia repair with synthetic polypropylene mesh.

**CASE PRESENTATION**

A 68-year-old male patient was admitted to the emergency department with the complaint of persistent right scrotal pain and swelling for a week after operated for right inguinal hernia. On his history, he explained that he went to the general surgeon several times in a week with the same complaint. Patient was consulted to us due to testicular arterial flow were not observed on scrotal doppler ultrasonography evaluation at emergency service.

The vital findings of the patient were stable; he was conscious and cooperative during the application

to the emergency department. On physical examination, right testis was painful with palpation, hyperemic and edematous. Scrotal pain did not decrease when elevation was performed. In the emergency service scrotal doppler ultrasonography was performed. Doppler ultrasonography was revealed that the scrotal skin was thickened and edematous. Blood flow was patents until the distal part of right spermatic cord. However, no flow was detected in the right testis parenchyma, and the parenchyma echo was diffusely reduced compared to the left. According to physical and radiological findings, right testicular torsion was diagnosed and emergent surgical exploration was planned. Right inguinal incision was performed to reach the spermatic cord. Full torsion of right testis distal to inguinal mesh was observed intraoperative. In the previous operation, it was noticed that the synthetic polypropylene mesh was implanted and it was not infected. Then, spermatic cord was detorsioned and general surgeon was invited to the operation and patient consulted intraoperative. Synthetic polypropylene mesh did not remove according to general surgeon's comments. It was



**Figure 1.** Intraoperative imagine of relationship between surgical mesh and spermatic cord. Arrow shows torsion of the spermatic cord.



**Figure 2.** Arrows shows intraoperative necrotic parts of testis and spermatic cord.

observed that the mesh did not compress the spermatic cord. According to the intraoperative findings, mesh independent testicular torsion was considered (Figure 1). Upon this features, tunica vaginalis was opened by incision and it was observed that the right testicular tissue was necrosed (Figure 2). Following the application of warm compress and papaverine injection into the spermatic cord for twenty minutes, the testis was not infused and no improvement was observed in the parenchymal color. According to these findings, inguinal orchiectomy was decided. Spermatic cord clamped and orchiectomy was performed. Patient was discharged after 2 days from operation without complication. Surgical specimen was pathologically evaluated and reported as necrotizing, torsion of testis, inflammatory granulation tissue and congestion.

## DISCUSSION

Testicular torsion is an emergency condition that can be easily diagnosed by physical examination and color doppler ultrasonography in patients admitting emergency service and presenting with an acute scrotum complaint [6]. Torsion of appendices testis, epididymitis, incisional hernia, tumor and trauma should be considered in the differential diagnosis. Testicular torsion peaks at two years of age; extravaginal testicular torsion is common in the prepubertal period, whereas intravaginal testicular torsion is most common in puberty and other advanced ages [7]. Physical examination and scrotal color doppler ultrasonography are the most preferred diagnostic methods. Since scrotal color doppler ultrasonography has a low probability of false positives, surgical exploration is essential for clinically suspected cases of torsion [8].

Inguinal hernia repair with mesh using is a commonly preferred surgical method due to reduced risk of recurrence by 30-50%. Complications after inguinal hernia repair occur in 1.7%-8% of all cases. Recurrence of hernia (0.3%-3.8%) is the most common complication, followed by injury to the vas deferens (1.6%) and injury to the vessels; in particular injury to the spermatic vessels can result in ischemic orchitis and lead to testicular atrophy (0.2%-1.1%). Unusual complications include testicle entrapment in

the inguinal canal, wound infections, ilio-inguinal, ilio-hypogastric and genitofemoral nerve damage [9]. In both experimental and clinical studies reported that, after both open and laparoscopic hernia repair with mesh, causes scar and testicular ischemia are rarely observed. Among the causes of testicular ischemia, acute thrombosis of the pampiniform plexus is considered first of all deduced from arterial thrombosis. Ischemia and necrosis may not observed as there are collateral vessels of arterial flow in acute arterial occlusion [10]. In fact, 33% of the cases with completely obstructed spermatic cord were reported not to have ischemia [11]. Testicular ischemia due to testicular torsion in the early period after inguinal hernia repair using synthetic polypropylene mesh is much more rare condition. In present report, we did not observe the testicular blood flow with scrotal doppler in patient with acute scrotum on the postoperative 7th day after opened inguinal hernia repair using polypropylene synthetic mesh. In the surgical exploration; right testis was torsioned from distal to the synthetic mesh. After detorsion of the right testis, blood flow could not observed and necrotic appearance of the right testis was observed. These features were considered secondary to the right testicular torsion. As a result, right inguinal orchiectomy was performed to the patient.

Because of the increasing elderly population, inguinal hernia repair is one of the most common surgical procedures performed by general surgeons in everyday practice. The acute scrotum associated with testicular torsion is one of the most common emergency surgical conditions in emergency service encountered by urologists. Persistent scrotal pain after inguinal surgeries may be sign of testicular torsion. Because the first patient visits performed by general surgeons after surgery, general surgeons must be awoken in terms of testicular torsion in differential diagnosis. In the study of Holloway including 8 patient who underwent inguinal hernia repair reported testicular infarction with scrotal colored doppler ultrasonography evaluation in 2 patient and absence of testicular blood flow in 1 patient after inguinal hernia repair [12]. In suspicious of testicular torsion after inguinal surgeries, scrotal colored doppler ultrasonography must be performed immediately and patients must consulted to the urologist. Routine examination of blood supply of testis with colored

doppler ultrasonography may facilitate early diagnosis of testicular torsion or infarct and give an opportunity for early treatment. We think good results could be succeeding with multidisciplinary approach of urologist, general surgeon and radiologist in the early period after surgery.

## CONCLUSION

It should be kept in mind that testicular torsion may develop during the early period in patients undergoing inguinal surgery such in our case and urgent surgical decision may be required as soon as possible. Otherwise, adverse events resulting with organ loss may occur and may put surgeons in trouble in terms of legally.

### *Authorship declaration*

All authors listed meet the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors, and all authors are in agreement with the manuscript.

### *Informed consent*

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

### *Conflict of interest*

The authors declared that there are no potential

conflicts of interest with respect to the research, authorship, and/or publication of this article.

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