# Penil revaskülarizasyon sonrası fıtık oluşumunu engellemek için operasyonla eşzamanlı preperitoneal mesh takviyesi; yeni bir yöntem

## *Preperitoneal mesh reinforcing performed simultaneously with the operation to prevent hernia formation after penile revascularization: A new method*

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**Özet**

**Amaç:** Penil revaskülarizasyon yapılan hastalarda inguinal herni gelişimi önemli bir postoperatif komplikasyondur. Bu çalışmada, inguinal herni riski taşıyan hastalarda mesh takviyesi yapılmasının herni gelişmesini önleyici prosedür olarak uygulanabilir bir yöntem olduğunu göstermek amaçlanmıştır.

**Materyal ve Metot:** Bu çalışmaya, 2010-2014 yılları arasında penil revaskülarizasyon ameliyatı yapılan 77 hasta dahil edilmiştir. Bu hastalardan 39'una mesh takviyesi yapılmadan (Grup 1), 38'ine ise prolen mesh takviyesi yapılarak (Grup 2) penil revaskülarizasyon ameliyatı yapılmıştır. Hastalar inguinal herni gelişimi için risk faktörleri açısından homojen olarak gruplandırılmıştır. Bütün hastaların operasyondan sonra üçüncü, altıncı ve onikinci aylardaki kontrollerinde fizik muayeneleri yapılmış ve gerekli görülen hastalarda inguinal bölge ultrasonografik olarak değerlendirilmiştir. Hastalar penil revaskülarizasyon ameliyatı sonrası herni gelişimine ve ameliyat sürelerine göre değerlendirilmiştir.

**Bulgular:** Bu çalışmaya dahil edilen hastaların yaş ortalaması grup 1 için 47,7 (25-68), grup 2 için 49,6 (28-66) olarak tespit edilmiştir. Her iki grup içinde ortalama takip süreleri 16,3 ay (11-26 ay) olmuştur. Grup 1 deki hastalardan 3 tanesinde postoperatif ikinci ayda, 2 tanesinde ise postoperatif üçüncü ve dördüncü aylarda direkt inguinal herni geliştiği saptanmıştır. Grup 2 deki hastaların hiçbirisinde herni gelişmemiştir. Fıtık gelişen hastalardan hastalardan 4 tanesine açık, 1 tanesine ise laparoskopik yöntemle herni tamiri yapılmıştır. Bu çalışmada prolen mesh kullanılmasına bağlı bir komplikasyon gelişmemiştir.

**Sonuç:** Penil revaskülarizasyon operasyonunda inguinal herni risk faktörü taşıyan hastalarda inguinal bölgeye preperitoneal mesh takviyesi yapılması operasyon sonrasında görülen direkt inguinal hernilerin önlenmesi için uygulanabilecek etkili bir yöntemdir.

**Anahtar Kelimeler:** Penil revaskülarizasyon, Herni, Prolen mesh

**Abstract**

**Objectıve:** Inguinal hernia development is a significant postoperative complication in patients receiving penile revascularization. This study aimed to reveal that mesh reinforcement in patients with a risk of inguinal hernia is an applicable treatment method to prevent hernia formation.

**Material and Methods:** Seventy-seven patients, were included into the study. While thirty-nine of the patients had penile revascularization without mesh reinforcement(Group 1), 38 of the patients had the operation with prolene mesh reinforcement(Group 2). Patients were grouped homogeneously in terms of hernia formation risk factors. After penile revascularization operation, patients were evaluated considering hernia formation.

**Results:** Mean age of the patients was 47.7 years for Group 1(25-68) and 49.6 years for Group 2(28-66). Mean patient follow up was 16.3(11-26) months. It was determined that 3 of the patients in group 1 had hernia during post-operative second month and 2 of the patients had it during post-operative third and fourth months. None of the patients in group 2 had hernia. Hernia repair was conducted by open surgery in four of the patients who had hernia and by laparoscopic surgery in one patient who had hernia.

**Conclusion:** Preperitoneal mesh reinforcement is an effective method that can be applied to prevent inguinal hernia which is observed in patients who have risk of inguinal hernia in penile revascularization operation.

**Keywords:** Penile revascularization, Hernia, Prolene mesh.

**Introduction**

In the treatment of erectile dysfunction, patients who cannot make use of medical options, patients with no comorbidities, and who are young can have penile revascularization operation before invasive procedures such as penile prosthesis implantation. In penile revascularization from which successful results can be obtained in suitable indications, direct inguinal hernia poses an important problem at the rate of 4,5% in the postoperative period (1). In this study, the results of mesh reinforcement carried out simultaneously in patients carrying the risk factors of hernia formation in order to prevent postoperative direct inguinal hernia development in cases on whom penile revascularization operation was performed were examined.

**Materials and Methods**

All of the seventy-seven patients who had penile revascularization operation with a diagnosis of erectile dysfunction of organic origin between 2010 and 2014 were included into the study. The patients were divided into two groups homogenously in terms of inguinal hernia risk factors (Table 1). In Group 1, there were 39 patients, and the cuts were closed as in the way they were opened after the revascularization process was completed. In Group 2, there were 38 patients, and prolene mesh reinforcement was performed in the preperitoneal area after the revascularization process before layers were closed. Risks factors which arise apart from abdomen cuts can be accepted as follows: those who have chronic cough due to such causes as severe asthma or chronic obstructive pulmoner disease, symptoms of lower urinary tract (International Prostate Symptom Score > 15), smoking for more than a year, whose body mass index is more than 26 and especially whose waist circumference is above 110 cm and who have chronic constipation according to Roma III criteria (2); that is, those whose complaints begin 6 months before admission to hospital and those who have complaints three or more days a month for three months. All patients were operated on with the same technique by the same surgeon.

**Surgical Technique**

After necessary preoperative preparations were made, the procedure was conducted on all patients under general anesthesia. After isolating the deep dorsal vein with a vertical cut made from the dorsal in the stem of the penis, layers were opened with a median cut below the umbilicus. After the front sheath of the muscle of rectus abdominis was opened, the transverse fascia was reached by spacing the muscle. Inferior epigastric veins between the transverse fascia and parietal peritoneum were found and stitched from where they enter the muscle and released till external iliac artery. By passing the inferior epigastric artery through the tunnel in the suprapubic area, anastomosis was made with modified Furlow Fisher technique into the deep dorsal vein. Transverse fascia layer was damaged in the course of this process, and falx inguinalis had to be cut. In thirty-nine patients in Group 1, rectus muscle and front sheath were closed without mesh reinforcement. In thirty-eight patients in Group 2, prolene mesh was placed to the inguinal ligament in the inferior and to the lower part of the transverse muscle in the superior. The patients of both groups were called to follow-ups in the third, sixth and twelfth months postoperatively, and the results were recorded.

**Results**

Mean age of the patients in Group 1 was 47.7 (25-68) years while it was 49.6 (28-66) years in Group 2. The patients were followed for a mean period of 16.3 (11-26) months. As a result, it was found that direct inguinal hernia developed in three out of the 39 patients in the second month postoperatively, in two in the third and fourth months before the mesh was placed. Four out of these 5 patients were treated with open repair while one was treated with laparoscopic hernia repair. Whereas, hernia recurrence did not develop in four of the patients who underwent open operation, hernia recurred as a result of the operation performed with laparoscopic method, and open hernia repair was performed. Hernia was not detected in postoperative follow-ups in any of the patients in whom mesh was placed. Any complication with regard to prolene mesh use was not reported in follow-ups after the hernia repair. Mean operational time in Group 1 and 2 was 87.7 ± 16.4 min and 93.9± 14.8, respectively, and any statistical difference was not detected (P>0,05). Thus, it is seen that mesh reinforcement in the preperitoneal area in order to prevent hernia development is an easy and secure method which does not bring any extra load to the patient and the surgeon.

**Table Legends**

**Table 1:** Patients were classified according to their risk factors for the development of hernias.

| | Chronic constipation | Prostatism | Chronic cough | Obesity | Smoking |
|---|---|---|---|---|---|
| Group 1 (n=39) | 3 | 4 | 2 | 7 | 17 |
| Group 2 (n=38) | 4 | 5 | 3 | 6 | 16 |

**Discussion**

Erectile dysfunction identified in the Egyptian papyruses firstly in 2000s B.C. is a case which causes disruptions in patients' life qualities at a socio-cultural level though it does not threaten life. In the whole world, there is an increase in erectile dysfunction prevalence with age. According to the data of Massachusets Male Aging Study, erectile dysfunction is observed at any rate in more than 52% of males between the ages of 40 and 70 (3).

There are two options as medical and surgical in erectile dysfunction which is of organic origin. Drugs used mostly in medical treatment is inhibitors of phosphodiesterase-5. In addition, there are some types of drugs that are applied as intracavernozal injections. In surgical methods, there are penile denture implantations and penile revascularization. Vascular surgery is performed in order to repair penile arterial inadequacy and veno-occlusive dysfunction. The aim is to obtain spontaneous physiological erection by increasing the blood amount going to cavernous substances and to protect smooth muscle structure by increasing oxygenation in cavernous substances. Success rates in young patients, who are younger than 50 years, who do not smoke and do not have diabetes anamnesis, and who do not carry other risk factors in terms of erectile dysfunction and neurological disease, who are diagnosed to have certain veno-occlusive dysfunction in cavernosometry and are not diagnosed to have any autonomic dysfunction in corpus cavernosum electromyography are promising (4).

Penile revascularization is performed with different anastomosis techniques between arteria epigastrica inferior and deep dorsal vein or dorsal penile artery of the penis. Whatever method is used, preoperative and postoperative complications such as bleeding, hematoma, pain, spermatic cord injury, mark partition, infection, and inguinal hernia can be seen in penile revascularization operation.

The fact that the frequency of inguinal hernia in adult males is nearly 16% makes it an important health problem of the society (5). Protruding of intraabdominal organs from a weak point in the inguinal area makes up the basic mechanism. This case can cause swelling, pain and discomfort in the inguinal area. If the bowel gets incarcerated and strangulated, it can generate a life threatening situation. Mesh placed between the preperitoneal area and musculofascial structures pose the only barrier for the protrusion of the peritoneum and viscera (6). In one of the studies, it has been reported that open or laparoscopic preperitoneal hernia repair is successful similarly in hernias that develop in patients who has had radical prostatectomy or intraabdominal surgery (7). In another study, it has been claimed that while BPH or surgeries related with malign prostate pathologies are applied to one hundred and seventy-two patients who have inguinal hernia, simultaneous hernia repair is a simple method that is applied by urologists with low complication risk (8).

Inguinal hernia is a complication which can be seen after penile revascularization operations. In the operation, during the procedure carried out to find the inferior epigastric artery, external oblique, internal oblique and the aponeuroses of the transverse muscles and the transverse fascia are incised. Therefore, the most accepted transverse fascia support in the development of inguinal hernia is weakened. Intra-abdominal pressure and smoking are among the factors that contribute to hernia formation. Factors such as chronic cough, stress, lifting heavy things, prostatism, obesity and constipation that cause high abdominal pressure and abdominal transverse incisions can be shown among other extra factors which cause the formation of inguinal hernia (9, 10).

Synthetic patches have been used in hernia surgery for more than thirty years. The fact that polypropylene patches are durable, inert, and monofilament, do not pave the way for infection, stimulate fibroplasias, and are not exposed to simple rejection makes them accepted synthetic patches (11, 12, 13). Due to these qualities, we preferred using polypropylene mesh.

**Conclusion**

In this study, the rate of incidence of inguinal hernia between patients in whom mesh was placed and in whom it was not was investigated, and a similar study has not been encountered so far. In patients who carry the risk factors of hernia formation and on whom abdominal surgery such as penile revascularization is performed, mesh reinforcement in the preperitoneal area can be accepted as an effective method in preventing hernia that can be seen in the postoperative period. After hernia development, since vascular structures formed in the previous operation can be damaged during hernia repair, the insertion of preperitoneal mesh simultaneously with penile revascularization can be used as a beneficial method for both the protection of vascular structures and the prevention of hernia development. Thus, the patient can be protected from the risks caused by surgical processes and be supplied with more financial advantage.

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