

# A Comparison of Early Postoperative Complications in Preperitoneal and Anterior Approaches in Inguinal Hernia Repair

İNGUİNAL HERNİ TAMİRİNDE PREPERİTONEAL VE ANTERİOR YAKLAŞIMLARDA ERKEN POSTOPERATİF KOMPLİKASYONLARIN KARŞILAŞTIRILMASI

Şükrü Aydın DÜZGÜN\*

\* S.S.Y.B. Besni Public Hospital, Besni, ADIYAMAN

## SUMMARY

78 adult patients with inguinal hernia were evaluated in two groups in years 1993 and 1994 at Besni State Hospital. In group 1, 35 patients were included and these patients were undergone hernia repair procedure with preperitoneal approach. 43 patients were included in group 2, and classic anterior approach was performed in the repair process. All patients were followed post-operatively ranging from 6 to 20 group 2 patients who undergone herniorrhaphy with anterior approach, complications like scrotal and inguinal cord edema, and ilioinguinal and genitofemoral neuralgia, were seen significantly higher than the group 1 patients.

The results of this study reveals that in inguinal hernia repair, preperitoneal approach is an effective method which can be used safely.

**Key Words:** Preperitoneal hernioplasty, anterior hernioplasty

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## ÖZET

İnguinal hernili 78 erişkin hasta 1993-1994 yıllarında Besni Devlet Hastanesi'nde iki grupta incelendi. Grup 1'deki 35 hastaya preperitoneal herni tamiri yapıldı. 43 hasta Grup 2'ye alındı ve Klasik Anterior tedaviler uygulandı. Bütün hastalar 6-20 ay arası takip edildiler. İkinci gruptaki hastalarda skrotal ve inguinal kord ödemi, inguinal ve genitofemoral nöralji, gibi komplikasyonlar birinci gruptan daha yüksekti.

Bu çalışmanın sonuçlarına göre preperitoneal herni tamiri güvenli ve etkin bir yöntemdir.

**Anahtar Kelimeler:** Preperitoneal hernioplasti, anterior hernioplasti

As the prevalence of inguinal hernia is high in population, the inguinal hernia repair is the most frequently performed abdominal operation. The main principle in these repairs is high ligation and / or excision of indirect hernia sac if exists, and supportment of the posterior wall of inguinal region. Despite the presence of large variety of many methods to realize this principle, an ideal method has not been proposed yet (1).

Preperitoneal approach in inguinal herniorrhaphy has been chosen occasionally but it is not a frequently used method. This study is conducted for the comparison of early postoperative complications of inguinal

hernia repair between the anterior and preperitoneal approach.

## MATERIAL AND METHOD

In this prospective study, 78 adult patients who undergone inguinal herniorrhaphy in our hospital in years 1993-1994 were evaluated. The patients were divided into two groups. In group 1, 35 patients were included and these patients were undergone herniorrhaphy with preperitoneal approach and in group 2, 43 patient were included and these patient were undergone herniorrhaphy with anterior approach.

In preperitoneal approach the skin incised 1,5 cm upper to classical vertical inguinal incision and over the internal inguinal ring. Aponeurosis of external oblique muscle and lateral part of rectus sheath was sectioned, internal oblique and transversus abdominis muscles

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**Yazışma Adresi:** Şükrü Aydın DÜZGÜN  
Devlet Hastanesi  
Besni-ADIYAMAN

separated without section and the fascia transversalis was sectioned then reached preperitoneal region. In indirect inguinal hernia, the neck of hernia sac isolated where it entered into internal inguinal ring and cut. Distal part of hernia sac left insitu. In cases the posterior inguinal wall was intact, only the internal ring narrowed and iliopubic tract repair made in cases of attenuated posterior wall and seriously enlarged internal ring (complete indirect inguinal hernia). In direct hernia cases the posterior wall strengthened by the iliopubic tract repair.

In the anterior approach which is the other method; in indirect hernia, high ligation and excision of the hernia sac was performed. In cases of simple indirect hernia, only the internal ring narrowed and in cases of complete indirect hernia and direct hernia, Mc Vay repair or iliopubic tract repair was performed.

The average operating time was lasted 34.8 minutes. In all repair procedures monofilamentous propilen no: 0 was used as suture material. In all patients spinal anesthesia was performed. Prophylactic antibiotic was not used. The length of stay in hospital averaged 2.85 days. General properties of patients are shown in Table 1.

## RESULTS

All patients followed for a time ranging from 6 to 20 months and evaluated for the early complications as; early recurrence, wound infection, sinus formation, cord edema, scrotal edema, inguinal neuralgia and paresthesia.

One of the patient in preperitoneal approach group was developed wound infection. In a patient with sliding hernia cord edema occurred. None of the patients developed scrotal edema and inguinal neuralgia.

One of the patients in anterior approach group wound infection; in two patients cord edema was developed. These edemas decreased in two weeks and disappeared at the end of fourth week. Ilioinguinal neuralgia lasting 6 months in six patients and lasting eighteen months in one patient was observed.

In none of the patients sinus formation and recurrence observed during the follow up period. The results are shown in Table 2.

## DISCUSSION

Preperitoneal approach in inguinal hernia repair was first applied by Thomas Annandale nearly a hundred years ago. This method was not used widely for a long time. In the 1960's Condon and Nyhus (2) pointed out the importance of fascia transversalis and iliopubic tractus in the development and repair of inguinal hernia. With these studies the preperitoneal (posterior) ap-

**Table 1.** General properties of patients.

	Group 1 (n:35)	Group 2 (n:43)
Average age	42.8	43
type of hernia		
Simple indirect	4	6
Complete indirect	17	24
Direct	8	12
Sliding	2	1
Recurrent	4	-
Localization		
Right	25	28
Left	10	15

**Table 2.** Distribution of complications by groups.

Complications	Group I (n:35)	Group II (n:43)
1. Wound infection	1	1
2. Sinus Formation	0	0
3. Cord Edema*	1	9
4. Scrotal Swelling	0	2
5. Neuralgia*	0	7
6. Recurrence	0	0
Total *	2 (5.7%)	19 (44.1%)

\*p< 0.05

proach was popularized again. Later Nyhus (3) declared the technique and results in details.

The largest series about preperitoneal approach was published by Nyhus (4). Nyhus, in this series of 1200 cases, reported 3% recurrence in indirect hernia and 6% recurrence in direct hernia. He also said that relaxation incision wasn't made and if it would have made, the ratios would decrease. He did not observe complications like inguinal neuralgia and edema of the scrotum and spermatic cord almost in all of the patients. Also, Nyhus stated preperitoneal approach is the best method of choice in the repair of recurrent inguinal hernias.

Greenburg (5) in his series with a high proportion of elderly and high risk patient, reported that by using artificial grafts or without grafts no recurrence occurred and this method was suitable for the elder people. Though Nyhus did not recommend to use preperitoneal approach routinely and to act selectively, Greenburg thought that the method can be used in every case.

Riba and colleagues reported in cases of elder patients with inguinal hernia and prostatic hypertrophy, prostatectomy combined with preperitoneal herniorrappay can be managed safely. Schegel and colleagues (7) reported also in radical pelvic operations simultaneous preperitoneal hernia repair can be done successfully.

In a series studied on preperitoneal prolen mesh repair by Mercan and colleagues (8) no recurrence occurred and emphasized the advantage of repair without deforming the inguinal canal anatomy (8).

Early complications in inguinal herniorrhaphy; edema in cord and scrotum and colleagues (8) no recurrence occurred and emphasized the advantage of repair without deforming the inguinal canal anatomy.

Early complications in inguinal herniorrhaphy, edema in cord and scrotum and related pain, ilioinguinal and genitofemoral neuralgia may decrease postoperative rehabilitation and occupational ability. As stated in the literature, cord edema, scrotal swelling and consequent testicular atrophy are frequently caused by the traumatization of testicular vessels and subsequent thrombosis, exaggerated narrowing of internal ring, section of cremasteric muscles and derangement of lymphatic drainage. Inguinal neuralgia is often caused by crushing and contusion of ilioinguinal or genitofemoral nerves during the dissection in the inguinal canal or entrapment of spermatic cord and spermatic vessels and nerves can be bypassed altogether by accessing the groin by an abdominal preperitoneal approach, so this complications are less commonly seen than anterior approach (9,10).

In our study, these postoperative complications following the preperitoneal approach were seen significantly less than the anterior approach. This observation is supported by the literature (4,9,11). Fong and Moosman and colleagues (14) reported that these complications could be prevented by the protection of the inguinal canal integrity, avoiding the dissection near to the spermatic cord and testicular vessels and sectioning of cremasteric muscles.

It is widely accepted that the main defect in inguinal hernia located at fascia transversalis (1,4). For this reason, currently it is accepted that repair of inguinal hernia should be done operating on this layer and other layers could be used secondarily. In anterior approach, fascia transversalis could not be completely viewed and evaluated surgically in emergence. In the anatomy of inguinal region the deep musculoaponeurotic lamina is the basic structure on which the surgical procedure done, consisting of fascia transversalis, iliopubic tractus, internal ring, the aponeurosis of transversus abdominis muscle and Cooper ligament (40). According to Nyhus (2) in anterior approach observation of this region may not be possible everytime and may cause lower success rates. The posterior or preperitoneal approach allows the complete visualization and evaluation of the posterior or preperitoneal approach allows the complete visualization and evaluation of the posterior wall of the inguinal region (4). The other advan-

tages of this technique are ligation of the indirect hernia sac at the entrance in the internal ring, uninterrupted of the inguinal canal, uncutting the cremasteric muscles, not traumatizing the spermatic cord, testicular vessels, ilioinguinal nerve and better evaluation of the wideness of the internal ring (2).

In conclusion, inguinal herniorrhaphy with preperitoneal approach is easily and safely performed method with infrequent postoperative complications. This method can be used for repair of all kind of adult inguinal hernias with the advantages like minimal traumatization of the inguinal region, underangement of the inguinal anatomy and appropriate to the basic principles of hernia repair.

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