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How important is the surgeon's experience in the success of orchiopexy? 15 years' experience of a tertiary center

Orşiopeksi başarısında cerrahın tecrübesi ne kadar önemlidir? Üçüncü basamak bir merkezde 15 yıllık deneyim

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ABSTRACT

Objective: Cryptorchidism is one of the most common congenital anomalies in pediatric urology. Orchiopexy operation is performed to prevent testicular damage caused by cryptorchidism. However, orchiopexy is an operation that requires experience. Although re-orchiopexies are technically demanding procedures, often a secondary intervention may be required. Therefore, we examined the causes and outcomes of orchiopexy cases who had secondary intervention in our institute under a single investigator.

Method: Orchiopexy surgeries, performed by pediatric urologists in a tertiary hospital, between 2005 and 2020 were retrospectively reviewed. The cases which were required a secondary orchiopexy are included in the study. Perioperative findings, time of the primary surgery, and success rates were evaluated.

Results: Secondary orchiopexy was applied to 88 cases. Primary surgery was performed in 66 (75%) of these patients in the tertiary hospital by pediatric urologists, and in the remaining 22 (25%) patients in a state hospital by general urologists. It was observed that hernia repair was performed at significantly higher rates in patients whose first operation was performed by a pediatric urologist (79% vs. 32%, $p<0.001$).

Conclusion: According to the results of our study, inadequate hernia repair may be associated with the need for secondary orchiopexy. Also, we can say that pediatric urologists are more experienced in undescended testis and therefore the results of the first surgery are more satisfactory.

Keywords: Undescended testis; orchiopexy; surgical failure; experience.

ÖZET

Amaç: Kriptorşidizm, pediatrik ürolojide en sık görülen konjenital anomalilerden biridir. Orşiopeksi operasyonu, kriptorşidizm nedeniyle oluşan testis hasarını önlemek için yapılır. Ancak orşiopeksi tecrübe gerektiren bir operasyondur. Tekrarlayan orşiopeksiler teknik olarak zorlu prosedürler olsa da, sıklıkla ikincil bir müdahale gerekebilir. Bu nedenle kliniğimizde ikincil girişim uygulanan orşiopeksi olgularının nedenlerini ve sonuçlarını tek araştırmacı altında inceledik.

Yöntem: Üçüncü basamak bir hastanede çocuk ürologları tarafından 2005-2020 yılları arasında yapılan orşiopeksi ameliyatları retrospektif olarak incelendi. Sekonder orşiopeksi gerektiren olgular çalışmaya dahil edildi. Perioperatif bulgular, primer cerrahinin zamanı ve başarı oranları değerlendirildi.

Bulgular: 88 olguya sekonder orşiopeksi uygulandı. Bu hastaların 66'sına (%75) üçüncü basamak bir hastanede çocuk ürologları tarafından, geri kalan 22 hastaya (%25) ise bir devlet hastanesinde genel üroloğlar tarafından primer cerrahi uygulandı. İlk ameliyatı çocuk üroloji uzmanı tarafından yapılan hastalarda anlamlı olarak daha yüksek oranda fıtık onarımı yapıldığı görüldü (%79'a karşı %32, $p<0.001$).

Sonuç: Çalışmamızın sonuçlarına göre yetersiz fıtık onarımı sekonder orşiopeksi ihtiyacı ile ilişkili olabilir. Ayrıca çocuk ürologlarının inmemiş testis konusunda daha deneyimli olduğunu ve bu nedenle ilk ameliyatın sonuçlarının daha yüz güldürücü olduğunu söyleyebiliriz.

Anahtar kelimeler: İnmemiş testis; orşiopeksi; cerrahi yetersizlik; tecrübe.

INTRODUCTION

Cryptorchidism is one of the most common congenital abnormalities in pediatric urology and is defined as the condition where the testis does not fully descend into the appropriate scrotal position and, as a result, is located anywhere between the abdominal cavity and the upper scrotum. It is reported that the incidence rate is 2-9% at birth and some boys recover spontaneously in 3-6 months (1–3). The descent of the tests is a complex morphological process induced in two stages. Insulin-like peptide controlled the first stage (2), which is facilitating gubernacular expansion, and the androgen facilitator inguinoscrotal migration controlled the second stage (3,4). Furthermore, gestational age, birth weight, family history, and maternal smoking during pregnancy are well-known risk factors (5–7). In addition, cryptorchidism is a risk factor for both testicular cancer and adult infertility (5). Therefore, pediatric urologists must quickly diagnose boys with cryptorchidism and provide adequate and timely treatment.

Orchiopexy operation is the standard treatment for cryptorchidism. The main purpose of this operation is to prevent testicular deterioration caused by the high thermal environment. Although generally considered a successful operation, the occurrence of postoperative cryptorchidism is not uncommon. Unlike standard orchiopexy, reoperation is a very technical and difficult procedure that requires detailed knowledge of inguinal anatomy (8).

In this study, we aimed to examine the factors affecting the failure of primary surgery in patients who underwent secondary orchiopexy, as well as the contribution of the surgeon's experience to this situation.

MATERIAL and METHOD

The present study was approved by the Institutional Ethics Committee (Approval number: 2023). The patients who were examined and operated with the diagnosis of undescended testis in our Pediatric Urology Department between 2000 and 2015 were retrospectively analyzed. Among these patients, patients who underwent secondary orchiopexy operation were included in the study. Patients were divided into groups according to whether the primary operation was performed by the pediatric urologist or the general urologist. The pediatric urologist who performed these operations had more than 200 orchiopexy experience, while the general urologist had less than 50. Patients' age, sex, body mass index (BMI), and other demographic parameters were recorded.

All secondary orchiopexy operations were performed by a pediatric urologist. Peroperative findings, site and time of primary surgery, and success rates were evaluated. While conducting the study, both the retrospective data obtained through archive scanning and the data obtained from the cases since the start of the study were used. Patients who were scheduled for two sessions of orchiopexy, nonpalpable and intra-abdominal testicles were excluded from the study.

Data were analyzed using software (SPSS, Version 23.0; IBM Corp, Armonk, NY). The Kolmogorov-Smirnov normality test was performed to determine the distribution. Afterward, Mann Whitney U test, Chi-square and Fisher's exact tests were used to compare the data between groups. The statistical significance was set at $p<0.05$.

RESULTS

A total of 360 primary orchiopexy were performed. 312 (86.7%) of these operations were performed by pediatric urologist and 48 (13.3%) by general urologist. Secondary orchiopexy was performed in 66 (21.1%) of 312 patients operated by a pediatric urologist and in 22 of 48 patients (45.8%) operated by a general urologist. Age, BMI, and the side of the undescended testis of these 88 patients were evaluated and were shown in Table 1.

In addition to these data, hernia repair and testicular localization were compared between the two groups. We found that pediatric urologist did hernia repair statistically significantly more than the other urologists. Pediatric urologist repaired 52 (78.8%) of the patients whereas general urologist repaired 7 (31.8%) of the patients ($p<0.001$). Furthermore, extracanalicular testicular localization was found to be statistically higher than the cases performed by the general urologist (100% vs. 80.3%, $p=0.033$).

Comparisons were also made based on each testicular unit, regardless of the surgical side. Similarly, statistically higher rates of hernia repair were observed in the first operation performed by pediatric urologists (76.6% vs. 44.4%, $p=0.003$). The comparison of other parameters between the groups according to testicular units was shown in Table 2.

DISCUSSION

This article is the first study to compare surgical treatment success of undescended testis with comparing the results of a general urologist and a pediatric urologist.

Table 1: Comparison of the data between groups			
	General Urologist (n=22)	**Pediatric Urologist (n=66)**	**p value**
Age at surgery, median (IQR)	14.5 (11-27.3)	16 (12-28)	0.490[m]
BMI, n (%)	16.0 (14.1-17.3)	15.9 (14.9-17.8)	0.386[m]
Side, n (%)			0.165[f]
Right	12 (54.5)	25 (37.9)	
Left	5 (22.7)	30 (45.5)	
Bilateral	5 (22.7)	11 (16.7)	
Hernia repair, n (%)			**<0.001[x]**
Yes	7 (31.8)	52 (78.8)	
No	15 (68.2)	14 (21.2)	
Testicular size, n (%)			0.456[x]
Small	7 (31.8)	28 (42.4)	
Normal	15 (68.2)	38 (57.6)	
Testicular location, n (%)			**0.033[f]**
Extracanal	22 (100)	53 (80.3)	
Intracanal	0 (0)	13 (19.7)	
BMI: Body mass index (kg/m2). m Mann Whitney-U test; x Chi-square test; f Fisher's exact test.			

Table 2: Comparison of data between groups according to testicular units.			
	General Urologist (n=27)	**Pediatric Urologist (n=77)**	**p value**
Age at surgery, median (IQR)	12 (11-27)	15 (11-26)	0.746[m]
BMI, n (%)	15.6 (14.3-17.3)	15.9 (14.8-17.8)	0.296[m]
Side, n (%)			0.182[x]
Right	17 (63)	36 (46.8)	
Left	10 (37)	41 (53.2)	
Hernia repair, n (%)			**0.003[x]**
Yes	12 (44.4)	59 (76.6)	
No	15 (55.6)	18 (23.4)	
Testicular size, n (%)			0.113[x]
Small	7 (25.9)	34 (44.2)	
Normal	20 (74.1)	43 (55.8)	
Testicular location, n (%)			**0.010[f]**
Extracanal	27 (100)	61 (79.2)	
Intracanal	0 (0)	16 (20.8)	
BMI: Body mass index (kg/m2). m Mann Whitney-U test; x Chi-square test; f Fisher's exact test.			

In our study, we found that the success rate of the pediatric urologist, who was more experienced in orchiopexy surgery, was higher than the general urologists.

In the literature, the incidence of recurrent cryptorchidism, after the first inguinal orchiopexy surgery, has been reported as 7.5-13% in different studies (9).

Currently, the surgical treatment of palpable undescended testis is orchiopexy with the creation of a subdartos pouch. This technique was first described by Lattimer (10) in 1957. Fixation is achieved by scarring of the everted tunica vaginalis to the surrounding tissues (11) . Pediatric urologist and general urologist use the same method since then. However, the risk of recurrence is also higher after orchiopexy surgeries performed by a general urologist, in line with the logic of "doing more does better" (12).

Patent processus vaginalis or hernia pouch is another problem, which general urologist are not familiar. In our article pediatric urologist repaired more hernia than the general urologist. We think that this is because the patent processus vaginalis is overlooked by general urologists. Bessel et al. (13) showed that 75 (62%) patients had processus vaginalis in their study including 103 patients. In this present study, the hernia sac repair rate of the general urologist was found to be significantly lower compared to the pediatric urologist (32% vs. 79%). We think that this is one of the reasons for the high need for reoperation in orchiopexies performed by a less experienced urologist.

Although the determination of the exact cause of failure is not always possible, several factors were shown in the literature. Most common causes are determined that the inadequate testicular mobilization and failure to perform high ligation of the hernia (14). Insufficient knowledge of the detailed anatomy of the inguinal canal seems to be an important factor responsible for this clinical problem (15). Ziylan. Et al. reported in their study that the hernia sac was not repaired in 62.5% of the cases (9).

We also show that intracanalicular testicular localization rate was higher of the pediatric urologist than the general urologist. Because surgery is more difficult in intracanalicular testicles, it was thought that low experienced urologists avoided these cases (16). Although orchiopexy surgery performed on intracanalicular testicles can be more difficult, it is seen in our study that it has high success rates when performed by an experienced surgeon.

Conclusion

According to the results of our study, performing hernia repair together with orchiopexy may reduce the need for reoperation. Also, we can say that performing orchiopexy by surgeons with sufficient experience will reduce the patient's need for secondary operation.

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