

## Timing of orchidopexy at a tertiary center in Saudi Arabia: reasons for late surgery

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**Funding:** None.

**BACKGROUND:** Orchidopexy should be performed during the first 18 months of life to decrease the risk of infertility and tumor formation. In our center, the timing of surgical correction varies depending on the availability of an operating room.

**OBJECTIVES:** Evaluate whether orchidopexy performed for patients referred to our center is done within the recommended time period and to determine causes for delay.

**DESIGN:** Retrospective descriptive study.

**SETTING:** Pediatric urology department of a tertiary care center.

**SUBJECTS AND METHODS:** We retrospectively reviewed the charts of patients charts who underwent orchidopexy at our center from 2000 to 2010. We assessed referral time and waiting list time, which were subdivided as follows: from referral to first visit and from first visit to surgery. We included patients younger than 14 years and excluded patients with comorbidities that affected the timing of referral and surgical treatment.

**MAIN OUTCOME MEASURES:** Referral time period and waiting list time for surgical correction of patients presented with undescended testis.

**SAMPLE SIZE:** 128

**RESULTS:** After exclusion of 32 patients because of comorbidities, we describe 128 who underwent surgery for cryptorchidism at our center. The median (interquartile range, minimum-maximum) for age at surgery was 46.7 months (24.4-83.4, 3.1-248.6]). The median (IQR) referral occurred at an age of 25.3 months (4.1-65.5). The median (IQR) waiting list time was 15.2 months (8.1-23.3). The median (IQR) waiting time from referral to the first visit was 4.1 months (1.0-8.2). The median waiting time from the first visit to surgery was 8.1 months (3.8-17.5).

**CONCLUSIONS:** The age at the time of surgery at our center was far from ideal because of late referrals. A structured program offered by our National Health Service to educate referring physicians is necessary. Community health initiatives must emphasize prompt referral to reduce the impact of delayed surgery.

**LIMITATIONS:** Lack of data on the type of referring physician (i.e., general practitioner, pediatrician, surgeon, urologist).

**CONFLICT OF INTEREST:** None.

Orchidopexy should be performed during the first 18 months of life to preserve later fertility. In the majority of cases, the number of germ cells in cryptorchid testes is within the normal range during the first 6 months of life; however, approximately 25% of boys with cryptorchid testes are born with a reduced number of germ cells.<sup>1</sup> Current guidelines recommend early orchidopexy for cryptorchidism to decrease the risk of infertility and tumor formation.<sup>2</sup>

In Saudi Arabia, when a case of undescended testis is diagnosed by the primary physician, the patient is referred to a pediatric surgery or urology service center. If surgical indications are confirmed, then the patient is scheduled for surgery. Surgical times vary depending on the availability of an operating room. The aims of this study were to evaluate whether orchidopexy for patients referred to our center is performed in a timely manner and to determine the cause of delay for orchidopexy not performed within the recommended time period.

## SUBJECTS AND METHODS

After institutional review board approval (assigned number 2151002), we performed a retrospective chart review of patients who underwent surgery for cryptorchidism at our center from 2000 to 2010. We defined the timings as: The time from birth to referral was considered the referral time, and the time from referral to surgery was considered the waiting list time. The latter was also subdivided as follows: from referral to first visit and from first visit to surgery. We included all healthy children younger than 14 years who underwent orchidopexy for congenital undescended testis at our institute. Patients with recurrent undescended testis (failed orchidopexy) and those with associated comorbidities (which can cause delays in referral) were excluded from our study.

## RESULTS

From 2000 until 2010, 160 patients underwent surgery for cryptorchidism at our center. Among them, 32 patients were excluded due to associated comorbidities such as developmental delay (9 children) and cloaca or bladder exstrophy (2 children). Associated multiple congenital anomalies and congenital heart disease were found in 11 and 10 children, respectively. therefore, they were excluded.

Of the 128 patients, 73 (57%) had unilateral and 55 (43%) had bilateral undescended testis. The location of the testis (intra-abdominal or inguinal) did not affect the results because we calculated the waiting time until the day of surgery regardless of the procedure. Fifty-six

(43.4%) were referred during the first year of life and 72 (56.8%) were referred after the first year of life (**Table 1**, **Figures 1 and 2**).

## DISCUSSION

Orchidopexy should be performed during the first 18 months of life to preserve later fertility. Some cases of undescended testes after the age of 15-18 months have lacked germ cells in the testicle(s). In addition, 40% of patients who presented with bilateral cryptorchidism at the age of 8 to 11 years showed an absence of germ cells according to testicular biopsy results.<sup>1,2</sup>

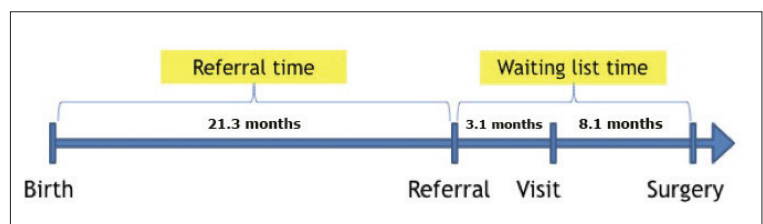
Testes that remain undescended by age 6 months are unlikely to descend spontaneously.<sup>3</sup> At age 6 months, if the testicles have not descended in the scrotum, then the boy should be referred for surgery to ensure timely orchidopexy. Testicles that remain outside the scrotum are at high risk for damage; the same scenario is true for those testicles that do not descend spontaneously within the first 6 months of life. In this case, boys should be referred to a surgical specialist because of the low chance of spontaneous descent.<sup>4</sup>

For boys with cryptorchidism, age 9 months is the optimum time to perform orchidopexy, especially in terms of postoperative testicular growth.<sup>5</sup> Therefore, the highest quality evidence recommends orchidopexy between 6 and 12 months of age. Intervention at this time may have good effects on future fertility and prevent testicular malignancy in these children.<sup>6</sup>

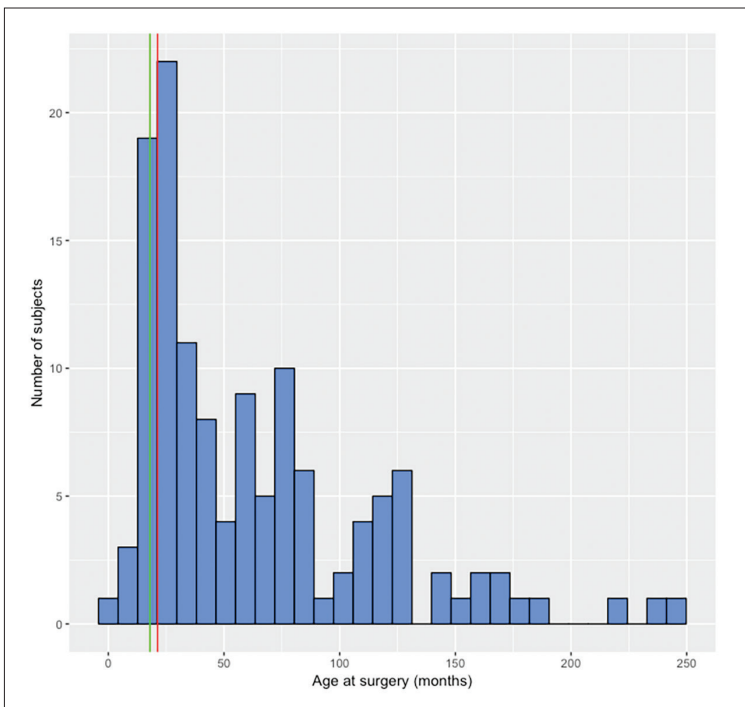
**Table 1.** Waiting times to orchidopexy.

	Median (IQR)	Range
Age at surgery	46.7 (24.4-83.4)	3.1-248.6
Time to referral	25.3 (4.1-65.5)	0-236.4
Referral to first visit	4.1 (1.0-8.2)	0-33.4
First visit to surgery	8.1 (3.8-17.5)	0-64.0
Waiting list time	15.2 (8.1-23.3)	0-88.3

Time in months.



**Figure 1.** Median time (months) from birth until orchidopexy.



**Figure 2.** Age at time of surgery (red line is median, green line is recommended time of surgery).

At our center, the median age of surgery was 43.7 months, which is far from the ideal age recommended for surgery. After analyzing our data, it was clear that the median referral time of 21.3 months was the main reason for delay. However, the waiting list time also has an important role in the delay.

After comparing our observations with those of international studies, delayed referral to a surgeon was found to be the most common reason for delayed surgery. The majority of orchidopexy procedures performed in New York (United States) between 1984 and 2002, under the age of 2 years were not performed

after the recommended patient age of 2 years.<sup>7</sup> Ahn et al, found that the reasons for delayed orchidopexy at a Korean tertiary care hospital were related to the parents of the child; parental requests for treatment of persistent retractile testis were delayed and approximately 15% of orchidopexy procedures were not performed at the proper time.<sup>8</sup> Similar results were observed in Austria; despite knowledge of the best timing for surgical treatment by pediatricians, orchidopexy was performed later than recommended.<sup>9</sup> In Saudi Arabia, it was observed that diagnosis and surgery of undescended testis are performed in a timely manner for only approximately half of the total patients treated.<sup>10</sup>

Alswayan et al recently reported late age of orchidopexy in their center in the eastern province of Saudi Arabia, and related this delay to late referral and long waiting time,<sup>11</sup> which is the same conclusion of our study. In their study, it was unclear whether the waiting time was from referral to time of surgery or from the first visit to surgery. Also they did not mention any relationship between time of surgery and the location of the testis (intra-abdominal or extra-abdominal), which had no effect in our population.

One limitation of the present study was the lack of data on the type of referring physician. This information would be helpful for designing a brief focused educational update to increase awareness among referring providers to promote early referral that may improve the timing of orchidopexy.<sup>12</sup> Community health initiatives must emphasize prompt referral to reduce the impact of delayed surgery.<sup>13</sup> In conclusion, age at the time of orchidopexy at our center was far from ideal for more than half of patients, mainly due to late referrals rather than a relatively long waiting list. A structured program to educate referring physicians provided by our National Health Service is necessary, and efforts to minimize the waiting time are required.

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