

ORIGINALNI RAD – ORIGINAL ARTICLE

Timing of Orchidopexy – Serbian Referral Center Experience
Vreme izvođenja orhidopeksije – iskustvo referentnog centra u Srbiji

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Summary **Introduction:** Undescended testis or cryptorchidism is one of the most common male congenital malformations of genitalia where one or both testes have not moved into the scrotum. The therapy gold standard is orchidopexy. European guidelines are recommending intervention between the ages of 6 to 12 months, and American Urology Association from 6 to 18 months, to lower the risks of subfertility and testicular carcinoma. **Objective:** The aim of the study is to evaluate whether orchidopexy performed for patients referred to our center is done within the recommended time period. **Methods:** We retrospectively reviewed the charts of patients with cryptorchidism treated in our center from 2016 to 2018. We classified the timing of orchidopexy before the 18 months and after the 18 months. **Results:** A total of 322 children were treated in our center during the study period. All patients underwent surgical treatment that included: orchidopexy (300 pts., 93.2%), orchiectomy (5 pts., 1.6%), laparoscopic exploration of abdominal cavity (13 pts., 4%) and testicle rudiment resection (4 pts., 1.2%). The median age at surgery was 4 years (range 0.9–18). Operation was done in the optimal period within 18 months of age in only 68 patients (21.1%). **Conclusion:** The majority of the patients studied at our center had operation at a later age than recommended because of late referrals. National program for educating referring physicians and parents is necessary to reduce the impact of delayed surgery.

Key Words: cryptorchidism, pediatrics, timely surgery, orchidopexy, testicular cancer

Sažetak **Uvod:** Nespušten testis ili kriptorhizam je jedna od najčešćih kongenitalnih malformacija genitalija kod muške dece koju karakterišu jedan ili oba testis koji nisu spušteni u mošnice. Zlatni standard u lečenju je orhidopeksija. U cilju smanjivanja rizika od neplodnosti i tumora testis Evropski vodič preporučuje da se operacija izvede u uzrastu od šest do 12 meseci, dok vodič Američke urološke asocijacije preporučuje operaciju u uzrastu između 6 i 18 meseci. **Cilj rada:** Cilj studije je da se evaluiira da li je kod pacijenata upućenih u našu ustanovu orhidopeksija urađena u preporučenom uzrastu. **Metode rada:** Retrospektivno su analizirani podaci pacijenata sa kriptorhizmom lečenih u našoj ustanovi u period od 2016. do 2018. godine. Uzrast u kome je urađena orhidopeksija klasifikovan je: pre 18 meseci i posle 18 meseci života. **Rezultati:** Za vreme ispitivanog perioda analizirani su podaci 322 dečaka lečena u našem centru. Svi pacijenti su operisani, orhidopeksija je urađena kod 300 pacijenata (93,2%), orhiektomija kod pet pacijenata (1,6%), laparoskopiska eksploracija abdominalne duplje kod 13 pacijenata (4%) i resekcija rudimenta testis kod 4 pacijenta (1,2%). Medijana uzrasta u kome je urađena operacija iznosila je 4 godine (raspon 0,9–18). Operacija je urađena u optimalnom uzrastu do 18 meseci kod samo 68 pacijenata (21,1%). **Zaključak:** Većina pacijenata je operisana u uzrastu izvan optimalnog zbog kasnog upućivanja u našu ustanovu. Nacionalni program za edukaciju pedijatara i roditelja je nepophodan u cilju adekvatnog lečenja u preporučenom uzrastu.

Ključne reči: kriptorhizam, dete, vreme operacije, orhidopeksija, tumor testisa

Introduction

Undescended testes or cryptorchidism is a condition when one or both testes have not moved into the scrotum before birth but are stopped on its normal path of descent or they are absent. It affects 4.6% of full-term and up to 45% of preterm neonates (1). Up to 30% of cases are bilateral (2). The diagnosis is made by pediatrician when newborn is

examined after birth. If the testicle has not descended into the scrotum by the six months of life it will unlikely descend spontaneously.

Approximately 80% of all undescended testes are palpable (3). Ectopic testes is positioned outside the scrotum and most commonly is localized in the superficial inguinal

pouch. There is no possibility to descend spontaneously so it requires surgical intervention.

Migratory or retractile testes have completed descent into a normal position into a scrotal sac but can be found in a supra-scrotal position due to an overactive cremasteric reflex. They can be easily manipulated down to the scrotum where they remain at least temporarily after the examination. Migratory testes should be annually monitored because up to 30% can become an ascending testicle requiring surgical intervention (4). The remaining 70% will not require treatment because they are likely to descend before or during puberty but annual evaluation is necessary. Non-palpable testicles are found in 20% of all undescended testes. In 50% of those cases testicles can be positioned intra-abdominally, canalicular or they are peeping right inside the internal inguinal ring. The other 20% of non-palpable testes are absent and 30% are atrophic/rudimentary (5).

The gold standard in therapy of undescended testes is surgical replacement in the scrotum (orchidopexy). European guidelines are recommending intervention between the ages of 6 to 12 months and American Urology Association from 6 to 18 months(5,6). Diagnostic laparoscopy should be performed in cases of non-palpable testis with subsequent removal or orchidopexy (7,8).

Patients with unilateral undescended testis have a lower fertility rate and normal paternity rate. Patients with bilateral undescended testes have both, lower fertility and paternity rates. A failed or delayed orchidopexy may increase the risk of testicular malignancy later in life (9,10).

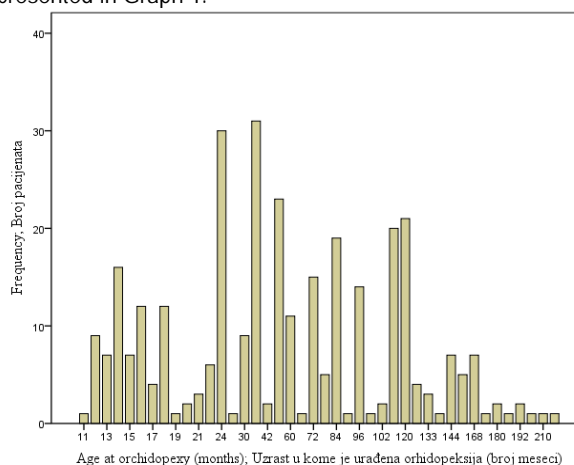
Methods

We conducted retrospective descriptive study. In the period from January 2016 to December 2018 data of the patients with cryptorchidism were extracted and reviewed from the Information System of Pediatric Urology Department of the Mother and Child Health Care Institute of Serbia "DrVukanČupić" in Belgrade, as a tertiary health care institution in Serbia.Excluding criteria were: re-do surgeries and the second stage of orchidopexy. All the patients with cryptorchidism were examined by pediatric urologists and underwent scrotal ultrasound examination.We classified the timing of orchidopexy before the 18 months and after the 18 months as recommended by European Association of Urology/European Society for Paediatric Urology and American Urology Association for the management of cryptorchidism(5,6).

Results

A total of 322 children weretreated in our center during the study period. They had diagnosis of cryptorchidism (108 pts., 33.5%), ectopic testes (189 pts., 58.7%)and non-palpable testicles (25 pts., 7.8%). Testicular agenesis/aplasia, as a subgroup of non-palpable testicles,was diagnosed in 22patients(6.8%).There were 283 patients (87.9%) with unilateral undescended testes and both sides were affected in 39 pts. (12.1%).The right and left

sided undescended testes had 135 (41.9%) and 148 (46%)patients, respectively.All patients underwent surgical treatment that included: orchidopexy (300 pts., 93.2%), orchiectomy (5 pts., 1.6%), laparoscopic exploration of abdominal cavity (13 pts., 4%) and testicle rudiment resection (4 pts., 1.2%). The median age at surgery was 4 years (range 0.9–18). In the optimal period within 18 months of age only 68 infants (21.1%) with cryptorchidism underwent orchidopexy. Distribution of patients by age is presented in Graph 1.



Graph 1 Age distribution of boys who underwent orchidopexy in the period from 2016 to 2018

Grafikon 1. Distribucija pacijenata koji su operisani zbog nespuštenog testisa prema uzrastu u vremenskom periodu 2016–2018.

Discussion

The transformation of neonatal gonocytes into Ad (dark) spermatogonia is crucial for male fertility in the period from 3 to 12 months after birth(11,12). Boys lacking Ad spermatogonia will develop infertility despite a successful orchidopexy at an early age (13). Hadziselimovic and colleges found that in the case of untreated intra-abdominal testes beyond 2 years of age there is an up to 40% chance of complete spermatogenic failure (14).In testes descended after 2 years biopsy at the time of orchidopexy has shown that testicular histology tends to worsen with age due to interstitial fibrosis and poor tubular characteristics, so Park and colleges recommended that orchidopexy should be performed no later than 2 years of age (11).Results in a randomized controlled study of Kollinand colleges showed that surgical treatment at 9months resulted in partial catch-up of testiculargrowth until at least age 4 years compared to surgery at 3 years, indicating that early surgery has a beneficial effect on testiculargrowth (15).Canaveseand colleges reported that sperm counts and motility are higher in young men who underwent orchidopexy before the age of 1 year (16).

Boys with cryptorchidism have a 20-fold higher chance of developing testicular malignancy, so screening during and after puberty is recommended for these boys. A systematic review and meta-analysis of the literature conducted by American groupshowed that pre-pubertal orchidopexy may

decrease the risk of testicular malignancy and that early surgical intervention is indicated in children with undescended testes (17).

In this study we showed that the surgery is performed much later than the recommended time, the median age at surgery was 4 years (48 months) despite the guidelines. The similar situation is in other countries. The study in USA performed by Aaron and colleagues showed that the median age of 677 boys at surgery was 28.9 months (18). The study performed by Kokorowski and colleagues showed that only 18% of patients underwent orchidopexy by the age of 1 year, and 43% underwent orchidopexy by the age of 2 years (19). Another USA study showed that 87% of boys who underwent an orchidopexy had a timely orchidopexy (20). In Germany most of the studied patients had surgery at a later age than recommended. Two studies showed that 42% and 57% of the orchidopexies were performed after the second birthday (21,22). Most boys in Ontario, Canada, undergo orchidopexy beyond 18 months of age, the median age at orchidopexy was 23 months (23). The age at the time of surgery at referral center in Saudi Arabia was far from ideal because of late referrals, the median age at surgery was 46.7 months (24). In Israel half of the children underwent orchidopexy before age 1.5 years and most of them before age 2 (25).

Undescended testes can be detected by pediatricians at birth, so at regular postnatal checkups pediatricians should pay attention to possible spontaneous descent by the age of 6 months. If not so, the child should be referred to pediatric urologist for further assessment, treatment and follow-up. We emphasize the importance of early diagnosis and referral of these children by pediatricians at mentioned age of 6 months, since at this age the chance of spontaneous descent is very low and anesthesia is safe. Educating pediatricians and parents about the importance of early surgery is important in management of these patients.

Conclusion

Study at our referral center showed that majority of the patients had surgical intervention at a later age than recommended, because of late referrals. National program for educating referring physicians is necessary to reduce the impact of delayed surgery. Also, parents need to be appropriately informed on treatment options and importance of the long-term follow up.

Children with undescended testes should be identified by the pediatricians and referred to the pediatric urologists at recommended age of life for appropriate treatment and follow-up, to avoid progressive loss of fertility potential and to lower the risk of testicular cancer.

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Primljeno/Received: 15.04.2019

Prihvaćeno/Accepted: 20.05.2019.

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