

SVI3: THE USEFULNESS OF LAPAROSCOPY IN NON-PALPABLE TESTES

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Background Non-palpable testes (NPT) constitute an excellent example of using both diagnostic and therapeutic possibilities of laparoscopy. Aims of the study: To determine diagnostic and therapeutic possibilities of laparoscopy in the population of boys with NPT and the characteristics of patients with unilateral non-palpable testes (U-NPT) and bilateral non-palpable testes (B-NPT). To assess the survival of descended NPT depending on the unilateral and bilateral pathology and the type of orchidopexy.

Materials and methods One hundred and thirty boys with 152 NPT were enrolled in the study. The long-term follow-up after laparoscopic procedure was minimum 2 years. We analysed surgical procedure records, patient medical history, out-patient records and the results of histological examinations. The obtained results were statistically analysed with the level of statistical significance at $p < 0.05$. Patients were divided into two groups: a group with U-NPT comprising 108 patients and NPT, and a group with B-NPT comprising 22 boys and 44 non-palpable gonads.

Results Boys from U-NPT and B-NPT constituted two different groups of patients. Absence of the testis, defined as an isolated abnormality, was more often observed in patients from the U-NPT group ($p < 0.05$). Bilateral absence of palpable gonads was related to a higher percentage of intra-abdominal testes ($p < 0.05$) and a higher percentage of co-existing abnormalities ($p < 0.05$), which demonstrates that NPT constitute a component of other syndromes in this group of patients.

Qualification for exploratory laparoscopy in the case of NPT should be particularly detailed in the group of patients with B-NPT. Ultrasound of the scrotum and inguinal canals is recommended.

The proportion of the intra-abdominal and canal location of the diagnoses of the non-palpable testis in both groups was comparable and was 64% in U-NPT and 61% in B-NPT for intra-abdominal location of NPT and 36% and 39%, respectively for the location in the inguinal canal ($p > 0.05$).

The role of diagnostic laparoscopy in U-NPT and B-NPT was comparable. Laparoscopy provided clear diagnosis in the intra-abdominal location of the non-palpable testis. Diagnosis was extended by additional exploration of the inguinal canal when vas deferens structures penetrated the inguinal canal. Laparoscopic exploration of the inguinal canal was performed in 8.55% of NPT and the classic method was used in 28.28% of non-palpable gonads. Considering the location site of the non-palpable testis the following were most frequently reported: abdominal aplasia/agenesis of the testis (31%), intra-abdominal testis (24%) and a hypoplastic gonad in the inguinal

canal (19%). The testis, aplasia and agenesis of the testis were most often detected in the abdominal cavity whereas a hypoplastic testis was statistically significantly more often detected in the inguinal canal ($p < 0.05$).

Therapeutic laparoscopic procedures (i.e. descent of the intra-abdominal testis, the removal of hypoplastic intra-abdominal gonad, excision of blind-ending vas deferens from the abdominal cavity and laparoscopic exploration of the inguinal canal) in the study population were done in 73% of cases in the group with U-NPT and 67% in the group with B-NPT. The therapeutic role of laparoscopy in U-NPT and B-NPT was comparable and it was applied in more than 2/3 of cases of non-palpable gonads in both groups. In addition, laparoscopic exploration of the inguinal canal increases the rate of effectiveness of therapeutic laparoscopy. Laparoscopic exploration of the inguinal canal in our study population and the abandonment of classic inguinal exploration would allow to determine the efficacy of therapeutic laparoscopy at 96.3% in the group of patients with U-NPT and 81.82% in the group of B-NPT.

Long-term treatment results (i.e. the survival of the descended intra-abdominal testes) were not different between the groups ($p > 0.05$). Effectiveness of video-assisted Petrivsky/Schoemaker orchidopexy and one-stage Fowler-Stephens approach in the case of intra-abdominal testes was comparable ($p > 0.05$).

Conclusions 1. Laparoscopy is an excellent tool in the diagnosis and therapy of U-NPT and B-NPT and it allows the determination of the full spectrum of abnormality and the application of a definitive surgical procedure.

2. Intra-abdominal testes occur more frequently in the group of patients with B-NPT and often constitute a component of co-existing abnormalities.

3. Survival of descended testes is comparable in groups with U-NPT and B-NPT and it is not different depending on the type of orchidopexy.

4. On the basis of the obtained results, the developed and implemented algorithm of the procedure proved effective. U-NPT and B-NPT require a different approach related to qualification for diagnostic laparoscopy, however the mode of treatment and long-term results are comparable.

Key words laparoscopy, non-palpable testes, abdominal testes, testicle units