

THESIS FOR PHD DEGREE

**THE FACILITIES OF THE EXPANSION OF MINIMAL INVASIVITY
IN THE UPPER URINARY TRACT STONES' SURGERY**

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SUMMARY

The aim of the study has been the investigation of the expansion of minimally invasive methods in the upper urinary tract's stone surgery, first of all in the **3/c** category (see **1. 3. 3.**, *Table I.*) on the basis of the categorization created by the author: it means the non routine-like application of the routine methods. The basis of the study was the data of 4200 upper urinary tract stones' endoscopic operations carrying out by the author.

On the basis of the different chapters' evaluation the following relations have been found:

The nowadays routinely applied minimally invasive methods can be expanded and developed, the facilities are determined mostly by the human skill, creativity and responsible courage.

All the categories evaluated by the author contain several special viewpoints which essentially should be considered for the safety of the procedures. These viewpoints have been worked out by the author, which help the reproduction of these procedures by skilled urologists.

These operations most likely are not going to be routine procedures in the future because of the rarity and the special skill requiring difficulties, but the results of the study which are equal or sometimes surpass the international literature data appears to prove the feasibility of these procedures.

On the basis of the concept of minimal invasivity detailed in the first chapter many viewpoints should be considered at the indication of the proper procedure, but first of all the patients' mental-physical health should be served: it requires at any case a unique, carefully meditated decision from the operating surgeon.

The goal of the study are discussed in details:

3.1. Endoscopic management of pediatric urolithiasis

3.1.1. Percutaneous suprapubic cystolithotripsy (PSCL) in childhood.

3.1.2. Endoscopic management of upper urinary tract stones in childhood.

4.1. The facilities of the expansion of percutaneous technique

4.1.1. Laparoscopically assisted percutaneous nephrolithotomy and endopyelotomy in pelvic and sacral dystopic kidneys.

4.1.2. Percutaneous procedures in horseshoe kidney.

4.1.3. PCNL and URS in pregnancy.

4.1.4. Percutaneous ureterolithotomy (PCUL)

4.1.5. Simultaneous bilateral percutaneous nephrolithotomy (SBPN) and its comparison to the separate unilateral PCNL.

5.1. Laparoscopic management of upper urinary tract stones

5.1.1. Laparoscopic nephrectomy

5.1.2. Retroperitoneoscopy

5.1.2.1. Laparoscopic ureterolithotomy

5.1.2.2. Laparoscopic management of ureteral perforation

DISCUSSION:

3.1.1.

The largest reported series in the literature are analysed. On the basis of author's experience the PSCL is the optimal minimally invasive solution of the endemic pediatric urinary bladder stones. Special technical viewpoints are discussed in details.

3.1.2.

The largest reported series in the literature on the endoscopic management (PCNL, EPT, URS) of pediatric upper urinary tract stones are analysed. Technical viewpoints are discussed in detail. Special conclusion: the etiology of the pediatric upper urinary tract stones in the developing countries might be nutritional in more than half of the patients, as it is in the cases of endemic bladder stones. These stones might be formed in the early childhood.

4.1.1.

The largest reported series in the world are analysed. The antegrade percutaneous transperitoneal approach with laparoscopic assistance appears to be the optimal and safest endoscopic solution of the stone holding pelvic and sacral dystopic kidneys. Special conclusion: bowels was adherent to the kidney in 20% of the cases, so the blind puncture should be avoided.

4.1.2.

Author's was the first report in Hungary about the PCNL in horseshoe kidney. Special technical viewpoints are pointed out, mostly regarding the approach of the different anatomic variations. Special conclusion: preoperative CT scan is advised to avoid colon injury (retrorenal colon frequently occurs with the horseshoe kidney).

4.1.3.

Author's was the first report in the literature about the PCNL in pregnancy. Special conclusion: the PCNL is a safe procedure during every period of pregnancy, with the detailed preventive rules the x-ray exposure is negligible. Great advantage of the procedure is that it might be performed under local anaesthesia.

4.1.4.

PCUL might be the method of choice in cases of large, dense, impacted mid ureteral stones. Special advantage: it might be performed under local anaesthesia (high risk patients), even after previous retroperitoneal operation. Nephrostomy tube aids the healing of ureterotomy. Special care should be taken to avoid injury of great vessels and adjacent organs

4.1.5.

The largest reported series of SBPN are analysed and this is the only comparative study with the unilateral PCNL in the literature. Special conclusion: the SBPN is advantageous for the patients regarding the blood loss and the kidney function as well. The SBPN itself does not cause more blood loss than the separate unilateral PCNL. The blood loss is in direct proportion to the size of the stone and the number of the created nephrostomy tracks. There is no significant difference in the two groups regarding the complications as well.

5.1.1.

Author was the first to present laparoscopic nephrectomy in Hungary. Laparoscopic nephrectomy might be the method of choice in cases of stone holding shrunken kidneys, hydronephrotic and pyonephrotic kidneys as well. In latter cases previous percutaneous nephrostomy and disinfectant irrigation is advised.

5.1.2.

Author was the first to present laparoscopic management of ureteral perforation and the so called „clip-knot” technique in the literature. Author was the first to report human retroperitoneoscopy, retroperitoneal ureterolithotomy in Hungary and the latter is the largest reported series in the literature. Author was the first to advise the laparoscopic ureterolithotomy as the method of choice in cases of large, dense and impacted stones. The main advantage of this method is the possibility for suturing of the ureterotomy.

7. PUBLICATIONS ON THE SUBJECT:

7. 1. Book:

Holman E, Tóth Cs: Laparoscopia az urológiában. Alapítvány a daganat- és kőmentes Magyarorszáért. Debrecen, 1995.

7. 2. Articles:

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2. *Holman E, Tóth Cs*: Húgyúti kövek endoszkópos eltávolítása gyermekkorban. Orv Hetil 1989; 130: 1859.

3. *Holman E, Tóth Cs*: Endoscopische Entfernung von Harsteinen bei Kindern. Z Urol Nephrol 1990; 83: 673.

4. *Morshed AS, Holman E, Tóth Cs*: Percutaneous suprapubic cystolithotripsy for pediatric bladder stones in a developing country. Eur Urol 2000. Közlésre elfogadva. (**Impact factor: 1,31**).

5. *Holman E, Khan MA, Tóth Cs*: Percutan suprapubicus cystolithotripsia gyermekekben. Magyar Urológia 1998; 10: 123.

6. *Tóth Cs, Hódi I, Holman E, Csipő L*: Primer percutan nephrolithotomia. Orv Hetil 1985; 126: 587.

7. *Tóth Cs, Holman E, Pásztor I, Ficsór E, Papp F*: Laparoszóppal vezérelt percutan köeltávolítás kismedencei distopiás veséből. LAM 1992; 2: 738.

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13. **Holman E, Kovács AG, Tóth Cs**: Terhesség alatti ureterobstructio megoldása dupla J katheterrel. Magyar Urológia 1991; 3:155.

14. **Holman E, Pásztor I, Tóth Cs**: Percutan nephrolithotomia késői terhességben. LAM 1991; 1: 96.

15. **Holman E, Tóth Cs, Khan MA**: Percutaneous nephrolithotomy in late pregnancy. J Endourol 1992; 6: 421. (**Impact factor: 1,33**).

16. **Tóth Cs, Holman E, Nagy A, Flaskó T**: Percutan nephroscopos ureterolithotomia. Magyar Urologia 1996; 8: 71.

17. **Tóth Cs, Holman E, Khan MA**: Nephrostolithotomy monotherapy for staghorn calculi. J Endourol 1992; 6: 239. (**Impact factor: 1,33**).

18. **Holman E, Khan MA, Tóth Cs**: Kétoldali percutan nephrolithotomia egy ülésben. Magyar Urológia 1997; 9: 317.

19. **Holman E**: 148 egy ülésben végzett kétoldali és 300 egyoldali percutan nephrolithotomia összehasonlító elemzése. Magyar Urológia 2000; 12: 229.

20. **Holman E, Alkalissy A, Tóth Cs**: Laparoscopos transperitonealis nephrectomia. Magyar Urológia 1995; 7: 237.

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23. **Holman E, Maróti Cs, Vancsura J:** Kézzel asszisztált laparoscopos radicalis nephrectomia. Magyar Urológia, 2000; 12: 127.
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25. **Holman E, Alkalissy A:** Retroperitonealis laparoskopos ureterolithotomia. Ötven műtét tapasztalatai. LAM 1997; 7: 632.
26. **Holman E, Morshed AS, Tóth Cs:** Endoscopic Clip-Knot Suturing Technique: Preliminary Report of Application in Retroperitoneal Ureterolithotomies. J Laparoendosc Surg, 1995; 5: 177. (**Impact factor: 1,054**).
27. **Holman E, Morshed AS :** Laparoscopos csomózást helyettesítő új eljárás: "klipp-csomó". Magyar Urológia 1995; 7: 43.
28. **Holman E:** Ureterolithotripsia során keletkezett perforáció ellátása laparoscoppal. Magyar Urológia, 1997; 9: 239.
29. **Holman E:** Laparoscopic Management of a Ureteral Perforation Happening during Ureterolithotripsy. J Endourol 1997; 12: 259. (**Impact factor: 1,33**).
30. **Holman E:** A minimális invazivitás fogalma és értelmezése az urológiai gyakorlatban. Endoscopia és minimálisan invazív terápia 1999; 2: 18.

7. 3. Abstracts (oral presentation, video, poster):

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2. **Holman E, Hódi I, Tóth Cs:** Percutan nephrolithotomia gyermekeken. Magyar Urológusok Társasága 7. Kongresszusa, Szeged, 1988. Április 21-23. (A 6, pp.5).

3. **Holman E, Khan MA, Tóth Cs**: Percutaneous suprapubic vesicolithotomy. World Congress on Endourology and SWL. Melbourne, Australia, November 14-17, 1996. J Endourol 1996; 10 (suppl. 1): S 175.
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5. **Tóth Cs, Holman E, Pásztor I**: Laparoscoppal vezérelt percutan vesekőeltávolítás kismencedei dystopiás veséből. 5. Országos Urológus Napok, Kecskemét, 1992; augusztus 13-15.
6. **Holman E, Hódi I, Tóth Cs**: Percutaneous nephrolithotomy and ultrasonic lithotripsy in horseshoe kidney in two cases. 7th Congress of European Association of Urology, Budapest, 1986. (A 2419 pp. 382).
7. **Holman E, Tóth Cs**: Terhesség alatti ureterobstructio megoldása dupla J katheterrel. Fiatal Magyar Urológusok Kongresszusa, Szolnok, 1988. szeptember 16.
8. **Holman E, Pásztor I, Tóth Cs, Khan MA**: Percutaneous nephrolithotomy in late pregnancy. 9th World Congress on Endourology and SWL. Vienna, Austria, June 19-22, 1991. J Endourol 1991; 5 (suppl 1): S 60.
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11. **Tóth Cs, Holman E, Khan MA**: PCNL monotherapy for staghorn calculi. 9th World Congress on Endourology and SWL. Vienna, Austria June 19-22, 1991. J Endourol 1991; 5 (suppl. 1): S 109.
12. **Holman E**: Felső húgyúti kövek endoscopos eltávolítása terhességben. Magyar Endourológus Társaság tudományos ülése, Budapest, 2000. október 6.

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14. *Tóth Cs, Holman E, Nagy A, Flaskó T*: Percutaneous nephroscopic ureterolithotomy. 14th World Congress on Endourology and SWL. Melbourne, Australia, November 11-14, 1996. *J Endourol* 1996; 10 (suppl. 1): S 213.
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ka, szakorvos képző tanfolyam, Budapest, 2000. március 31.

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24. **Holman E, Khan MA, Tóth Cs**: Simultaneous bilateral percutaneous nephrolithotomy. 14th World Congress on Endourology and SWL. Melbourne, Australia, November 11-14, 1996. J Endourol 1996; 10 (suppl. 1): S 142.

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28. **Holman E, Alkalissy A**: Laparoscopos nephrectomia: kezdeti tapasztalataink 10 műtét kapcsán. Magyar Urológusok Társasága 10. Kongresszusa, Debrecen, 1997. október 16-17.

29. **Holman E, Maróti Cs, Vancsura J**: Laparoscopic nephrectomy in the cases of pyonephrotic kidneys following percutaneous nephrostomy. 17 th World Congress on Endourology and SWL. Rhodes, Greece, September 2-5, 1999. J Endourol 1999; 13 (suppl. 1): A 89.

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34. **Holman E, Maróti Cs, Vancsura J, Soós K Jr**: Kézzel asszisztált laparoscopos radicalis nephrectomia. Magyar Sebész Társaság Endoscopos Szekciójának 6. Kongresszusa. Szeged, 2000. október 5-7. (pp. 14).

35. **Holman E, Maróti Cs, Vancsura J, Soós K Jr**: Hand-assisted laparoscopic radical nephrectomy. 2nd Congress of CEAU, Budapest, October 13-14, 2000. (pp. 73).

36. **Holman E, Tóth Cs**: Laparoscopic ureterolithotomy: the method of choice in several cases? 13th World Congress on Endourology and SWL. November 26-December 1, Jerusalem, Izrael, 1995. J Endourol 1995; 9 (suppl. 1): S 102.

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39. **Holman E, Alkalissy A, Tóth Cs, Nagy A**: Röntgen-képerősítő használata az ureter laparoscopos felkeresésére. Magyar Urológusok Társasága 10. Kongresszusa, Debrecen, 1997. október 16-18.

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43. Al-Hadrani A, **Holman E**: Laparoscopic surgery in a developing country. 37th World Congress of Surgery, Acapulco, Mexico, August 24-30, 1997.
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