VIDEOSCOPIC EXTRAPERITONEAL OPERATIONS OF SUPRARENAL GLANDULES

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An adrenal tumors are a clinical problem encountered by all health care providers go into endocrinological surgery. Nowadays the videooscopic adrenalectomy gains mounting acceptance. In the adrenal operations two kinds of operative access are used: an intraperitoneal and an extraperitoneal.

The aim of the study was to analyse its own material and literature in purpose to find the answer if extraperitoneal access may be acknowledged as widely used method in adrenal tumor operations.

Material and methods. 68 videooscopic adrenalectomy with extraperitoneal access were made in the Surgery Department of MSWiA Hospital in Łódź, between 2005 to 2007. The time of the operation, the time of the hospitalization, intraoperative blood loss, probability of complications, number and reasons of the conversies were taken into account.

Results. In all the patients was performed complete tumor resection with adrenal gland. The diameter of removed tumors was between 4-14 cm. In 23 cases (33.8%), intraoperatively, during tumor preparation, the continuity of the peritoneum was broken however it didn't have any influence for the operation’s proceedings and postoperative condition of the patients. Three conversions were made (4.4%). The average time of hospitalization was about 3.1 days. There weren't observed, in the postoperative period any wound suppurations or postoperative hernias.

Conclusions. The own observations in confrontation with literature let find an extraperitoneal videooscopy as method with wide application in various size and origination in adrenal tumor operations.

Key words: adrenal tumor, adrenalectomy, extraperitoneal access
bitable values of this technic like: short time of hospitalization, quick return to activity and satisfaction of the cosmetics’ effects. The authors consider that present confines in using this technic in adrenal tumor operations derive from little experience of surgeons and medical equipment limitations.

Using of the videoscopic technics in malignant adrenal tumors operations, still raise many controversies. Lombardi and cooperators (1), emphasise advantages and utility of laparoscopic technics in malignant tumor operations, which are based on their own material. They regard that initial laparoscopic exploration may be used in case of suspicion of malignant changes to confirm or eliminate diagnosis and assess tumor if it is suitable for operation. An indication to conversion is local invasion of neoplastic process which doesn’t allowed on the radical operation (2).

The main health care providers go into surgical treatment of adrenal diseases, operate on the patients using two main videoscopic access to the tumor. The first is an intraperitoneal access and the second is an extraperitoneal one. Both of the following methods have their followers and opponents. The advantage of an intraperitoneal access is lower risk of appearing an intraoperative pressure leap, especially in case of pheochromocytoma operation. An intraperitoneal access makes possible a better insight to the surgical field. In the other side, in accordance with other authors an extraperitoneal access is safer and more efficient due to less risk of collision with structures laying intraperitoneally. In turn, Tai and cooperators (4), basing on their own materials’ analysis, claim, that an endoscopic adrenalectomy is the method from choice, but both an intraperitoneal and an extraperitoneal, are safe and give good results.

In the study the authors analyse own material and literature, just to find the answer if an extraperitoneal access may be found as widely used method in adrenal tumor operations of various size and origination of the tumor.

**MATERIAL AND METHODS**

An adrenal tumor operations with an extraperitoneal access in videoscopic method have been made in the Surgery Department of MSWiA Hospital in Łódź since 2005. 68 videoscopic adrenalectomy with extraperitoneal access were made in the Surgery Department of MSWiA Hospital in Łódź, between 2005 and 2007 (including 42 women and 26 men). An age mean in patients that were operated on was 45 years (27-71 years). There were operated on: 38 patients with hormonal inactive adrenal tumor-incidental tumor, 7 patients with Cushing syndrome, 9 patients with Conn syndrome and 14 patients with pheochromocytoma (tab. 1).

The diameter of operated tumors was between 4-14 cm. In all cases there was performed a successful radical operation. Every videoscopic adrenalectomy were made with an extraperitoneal access, in the position on the opposite site to the operated area, at an angle of 60 grades. Patients were operated on with general, intratracheal anaesthesia. There was used the camera with slanted optics of 30 grades, with pneumoperitoneum formed by carbon dioxide, that was giving with pressure between 20-27 mm Hg. An operative access, on the right and the left side, was routinely gained by three, 10 mm trocars insertion. An oral nutrition was began between 1-2 twenty-four hours after operation.

**RESULTS**

The diameter of operated tumors was between 4-14 cm (tab. 2). In all patient there was made a complete tumor resection with an adrenal gland. The mean time of an operation was 1.5 hour (50 min – 2 hours and 10 min). In the patients who were operated on during last year the time was definitely shorter—at the average 70 min. It was caused by gaining adequately greater experience by operators. An intraoperative blood’s loss was between 70-180 ml (at

<table>
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<tr>
<th>Incidental tumor</th>
<th>Cushing syndrome</th>
<th>Conn syndrome</th>
<th>Pheochromocytoma</th>
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<tr>
<td>38 (55,9 %)</td>
<td>7 (10,1 %)</td>
<td>9 (13,2 %)</td>
<td>14 (20,8 %)</td>
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the average 120 ml). In 23 cases (33.8%), intraoperatively, during tumor preparation, the peritoneum continuity was broken; however, it didn’t cause any technical difficulties during operations as well as it didn’t have any influence on the patients’ postoperative period. Three conversions were made because of: ventilation disorders leading up to fast increasing of carbon dioxide pressure in the blood, an intraoperative bleeding, and due to tumor infiltration on the local tissues which wasn’t illustrate in the visual examinations, which had been done earlier.

In the first 10 operated patients, after surgical intervention, the subcutaneous emphysema in the lumbar region and thoracic wall was diagnosed. Finally using the plugging trocars with balloons caused that only occasionally the little subcutaneous emphysema in the lumbar region can be observed.

In the first twenty-four hours after operation the regular peristaltic movement was observed in 100% of the patients, however the peristaltic impairment in the first hours after operation was observed in 9 patients (13.2%) from the group where peritoneal continuity was broken. In the postoperative period the patients were mobilized in the evening hours at the operation day (94%) and were discharged between 2-4 postoperative days (at the average 3.1 day). The hospitalization time was determined by necessity of hormonal disorders’ compensation caused by tumor resection. In the postoperative period it was noticed, that no one of an operated patients had any wounds suppuration or postoperative hernias in the location after tracars. At the 8 patients (11.8%) occurred lumbar paresthesia, which abated after 2-3 months.

**DISCUSSION**

The surgical treatment of an adrenal gland diseases was begun in 1926, when Roux and Mayo independently and successfully removed pheochromocytoma (5, 6). Subsequently, in 1936 Young described the technics of concurrent uncovering and an operation both adre-
The controversies that involve using the laparoscopic technics are connected with the malignant adrenal tumor operations. Nowadays, an estimation that classical adrenalectomy is considered as a technic reserved for the big tumors with suspicion of malignancy is challenged. An initial laparoscopic exploration may be conducted just to confirm or exclude diagnosis and possibility of the radical operation. The videoscopic adrenalectomy may be performed in case of malignant tumors, provided that all oncological precautions of radical removing would be adhered. An indication to the conversion is only the local tumor invasion that not allowed for performing an operation radically. Not a strict size of a tumor, but an experience and surgeon’s skills, should decide about the videoscopic adrenalectomy. The size of the tumor above 12 cm shouldn’t be the absolute contraindication for using the videoscopic technics. Obviously that may seemed to be the problem removing this size tumor from an operative field. In our center, the tumors like these were removing with capsule by widening the section after one of the trocars. The references emphasize the fact that the videoscopic adrenalectomy may be used also in children with a good result, however it shouldn’t be forgotten about securing applicable size of an instruments for the pediatric surgery.

An indications to the operations like these are the same as in adults. In the Surgery Department of MSWiA Hospital in Łódź since 2005, performing the videoscopic adrenalectomy with extraperitoneal access, have been preferred the particular indication to the adrenalectomy by this method is the state after earlier performed abdominal operations.

An indisputable advantage of extraperitoneal method is: performing an operation by using only three trocars, lack of an interference in the structures laying intraperitoneally. An abridgment of an operation time progressing with an increasing number of an operations derives from the curve of the operators learning. The fast mobilization of the patients and short hospitalization time argue for an extraperitoneal technic. An analysis of an operations results, demonstrates the slight risk of postoperative complications like: the wound suppuration or postoperative hernias. Below data univocally indicate that an extraperitoneal access may be found as efficient and safe in an adrenal gland operations.

CONCLUSIONS

In our opinion, if the center has an experience in an adrenal tumor operations and has the videoscopic equipment and qualified team at it’s command, that the videoscopic method with an extraperitoneal access may be considered as efficient and safe method in an adrenal diseases treatment.

REFERENCES


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COMMENTARY

The presented study confirmed the importance of minimally invasive procedures, especially videoscopy in today's surgery. Benefits confirmed by numerous clinical investigations, and the novel and reliable equipment eliminating all inconveniences connected with the laparoscopic method enable to apply these methods in case of different surgical procedures. The above-mentioned has significantly changed the image of modern surgery and in many cases the qualification and management of therapeutic processes. Minimally invasive surgery has become a permanent element of therapy, and not only performed in selected cases and centers. This is especially visible in case of videoscopy/laparoscopy of the suprarenal glands, where the above-mentioned is the method of choice.

Videoscopy of the suprarenal glands, since the first adrenalectomy by means of the above-mentioned, confirmed the safety and benefits of the method. The operations gained wide acceptance and became the method of choice in the treatment of suprarenal pathologies in many centers. During a short period of time the dynamic development of the method connected with the benefits lead towards the creation of a similar approach, considering videoscopy and classical surgery. Thus, the surgeon can select the approach method, depending on operative indications and experience of the operative team. The choice of the method should be individually adapted to the patient and pathology. Thus, there is no golden standard considering one operative technique.

Benefits of videoscopy are as follows: shorter hospitalization and faster recovery to everyday and professional activity. Minor postoperative pain, fewer local and postoperative complications, as well as a better cosmetic effect should also not be forgotten. The above-mentioned is connected with more accurate endocrinological parameters, better suprarenal imaging examinations, and better patient preparation towards anesthesia and surgery.

The choice of the method and approach, whether classical or videoscopic, retro- or transperitoneal should depend on the experience and conviction of the surgeon. Benefits and side-effects of every method facilitate the choice of the method, considering suprarenal gland surgery.

In case of videoscopy most centers performing surgery by means of the method (85%) prefer the transperitoneal approach with the lateral modification.

The size of the lesions has no influence on the diagnosis, only on the suspicion of invasiveness, and thus, should not be the decisive factor considering the choice of the operative method. Thus, when qualifying patients towards surgery one should consider other factors suggesting the possibility of a neoplastic disease or its absence (hemorrhages, necrosis, heterogenic tumor structure, regularity of the lesion, signi-
significant increase in size during the observation period, changes in the density of the solid part of the tumor, heterogenic structure observed during imaging methods after contrast administration, as well as infiltration of lymph nodes and lymphadenopathy). It is important to differentiate malignancy. Whether the lesion is primary or secondary? The above-mentioned can influence the future of the patient. Prognosis in case of suprarenal carcinoma depends on local progression upon diagnosis and radicality of the resection during primary surgery. Thus, there is no rigid schedule when qualifying patients towards videoscopy.

Metastatic tumors during the initial stage of the disease were also a disputable indication. Long-standing observations demonstrated that the excision of a single metachronic lesion can improve survival by a mean of 20-30 months after adrenalectomy, in comparison to 6-8 months if the procedure was not performed. There was no difference considering survival, as well as the surgical margin (radicality of the procedure) between the classical method and videoscopy. Additionally, the laparoscopic approach plays a diagnostic role in case of secondary lesions. Smaller tissue traumatization and better visualization during videoscopy enable to perform radical resections with a surgical margin allowing to maintain oncological standards.

In case of large tumors exceeding 8cm the risk is greater, in spite of radical tumor excision. On the other hand, there is a correlation between the time of the operation and tumor size. In our material the above-mentioned was significant in case of tumors exceeding 5.5cm. Another problem is the underestimated size of the lesion observed during imaging examinations. Thus, patients should be qualified towards classical surgery in case of suspicion of a neoplastic lesion, as well as when local infiltration, lymphadenectomy and distant metastases are observed.

Classical surgery is indicated in case of reoperations, due to suprarenal gland resections, and when the size of the tumor exceeds 8cm. However, experienced surgical teams consider 10cm as the borderline, under the condition that there are no other factors of malignancy. Some Authors consider that the size of the tumor plays a smaller role when qualifying patients towards videoscopy.

The above-mentioned is connected with the evolution of opinions and changes in selected stereotypes. Conversion is no longer considered as a complication. It is a controlled decision of the operating team, based on local diagnostics and tumor resectability. Some Authors consider laparoscopy as the method enabling the confirmation or exclusion of the initial diagnosis with the simultaneous evaluation of the possibility to perform radical surgery. This is possible in case of the transperitoneal approach and metastatic lesions. The above-mentioned enables the inspection of the abdominal cavity.

Videoscopy should not be performed, regardless the approach in case of invasive tumors and features of malignancy. They should be subjected to classical surgery. Based on my experience the lateral transperitoneal approach allows more surgical elasticity, enabling the verification of existing doubts when qualifying patients.

Thus, videoscopic adrenalectomy from the transperitoneal approach seems to be the method of choice.

I would like to congratulate the Authors on their results, which break some stereotypes.

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