Laparoscopic Adrenalectomy for An Androgen Secreting Adenoma in a Three-Year Old Girl: A Case Report

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Abstract

Laparoscopic Adrenalectomy in adults has become the gold standard treatment for adrenal tumors. On the contrary, in infants and children, because adrenal tumors are often large and infiltrative, few experiences have been reported. The author presents a case of an androgen secreting adenoma, resected successfully by right laparoscopic adrenalectomy.

Keywords: laparoscopic adrenalectomy, child.

Introduction

Since the first successful adrenalectomy by Gagner and associates in 1992, laparoscopic adrenalectomy has gained acceptance for many adrenal masses in adults[1]. In children, because adrenal tumors are often large and infiltrative, only a few experiences have been reported. In this case report the successful laparoscopic resection of a benign virulising right adrenal tumor in a three-year-old child is described.

A Case Report

A healthy three-year-old girl was evaluated for contra sexual precocity. She presented with musculinization, hirsutism with excessive hair growth on her chest, back and external genitalia, clitoral enlargement and acne. Karotyping was 46 XX. Biochemical testing revealed elevated serum testosterone and urinary 17 ketosteroids. Bone age on X-rays was normal for her age. On MRI scan, there was a well-encapsulated right adrenal tumor measuring 3x4 cm without obvious infiltration. She underwent a laparoscopic right adrenalectomy. Operating time was 80 minutes. Histological examination revealed a benign adreno cortical adenoma. There were no intra or postoperative complications. The patient started oral feeds 6 hours post op, and was discharged on the third postoperative day.

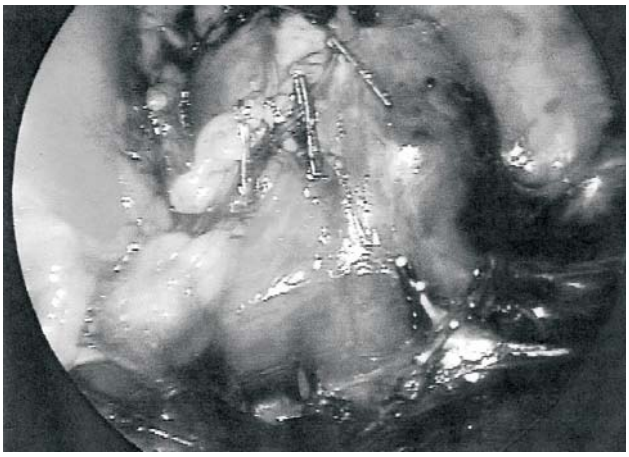


Fig. 1: Clipping of the adrenal veins.

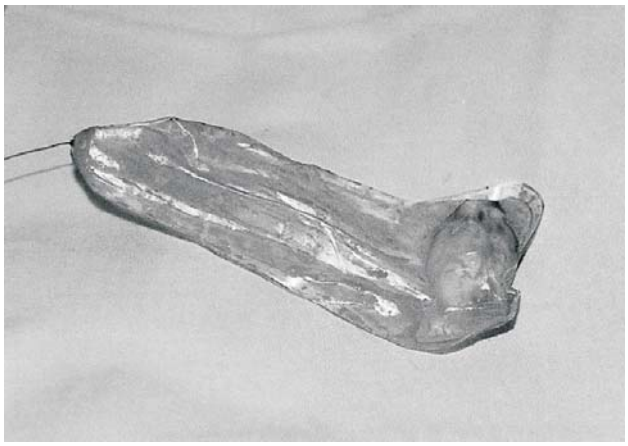


Fig. 2: Removal of tumor in an endoscopic bag.

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Surgical Technique

A trans peritoneal technique was used. The patient was positioned in the left lateral position. Four 5mm trocars were inserted two fingerbreadths below the costal margin from the mid clavicular to the post axilliary line. A 5mm 30^0 telescope was inserted through the second port. A fan retractor was inserted through the most medial port. The two lateral ports were used as working ports. Resection began by dividing the right triangular ligament, and then retracting the liver with the fan retractor to expose the right adrenal gland. Circumferential dissection of the adrenal gland was then performed. The key step in the dissection was the ligation of the right adrenal vein, which drains directly into the inferior vena cava. Two staples proximal and one distal were used before division of the vein. Other veins that were encountered were also divided between clips.

The specimen was then placed in an endoscopic bag and removed through one of the trocar wounds. The fascia was closed and Dermobond was used for skin closure.

Discussion

Functional tumors, which cause musculinization or feminization, are extremely rare. Once identified all functional tumors should be excised surgically. In children most of these tumors are benign, and the prognosis is excellent[2].

We used the trans abdominal approach for removal of this tumor. There is controversy about what is best: trans abdominal or the retroperitoneal approach. The trans abdominal laparoscopic approach is thought to be preferable because it provides a wide operative field with good visualization[3]. There is limited working space with the retroperitoneal approach, which could be a disadvantage in the case of a vascular injury. It is a more direct approach and fewer trocars are necessary.

Patient selection is important. The laparoscopic approach is only suited in children for small, well encapsulated, non-invasive, presumably benign tumors, and selected neuroblastomas[4]. Nakajima and coworkers proposed endoscopic adrenalectomy for stage one or two neuroblastomas, and for residual tumors after chemotherapy in stage 4S[5].

No criteria are specific to distinguish a benign tumor from malignancy. The size of the tumor can give an indication: the larger the tumor, the better the chance for malignancy. A second criterion for malignancy is radiological. A clear-cut border and non-invasive appearance on sonar, CT or MRI scan is an indication of benignancy. Functional scans such as the MIBG scan are not accurate to distinguish benign from malignant regions. Biological criteria are also important. A high concentration of HVA and VMA is usually well correlated with malignancy[4]. In the case of pure cortisol production in a secreting cortisol tumor, there is a greater likelihood of benignancy. In the case of feochromocytoma the lesion is benign in more than 90% of cases[4].

The potential advantages of a laparoscopic adrenalectomy in children are similar to that of other laparoscopic operations (less post op pain, cosmetic, quicker discharge and less intra abdominal adhesions).

Laparoscopic adrenalectomy is safe and effective; provided patients are carefully selected and meticulous laparoscopic technique is used.

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