DOES INTRAABDOMINAL PRESSURE IN LAPAROSCOPIC PROCEDURES TRANSFORM PATENT PROCESSUS VAGINALIS INTO CLINICAL HERNIA?

Original Article

LAPAROSKOPİK GİRİŞİMLERDEKİ İNTRAABDOMİNAL BASINÇ PATENT PRESESSUS VAJİNALİSİ KLİNİK FITIĞA ÇEVİRİRMİ?

Abdullah Yıldız

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey, Paediatric Surgeon.

Melih Akın

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey,Paediatric Surgeon.

Basak Erginel

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey.

Cetin Ali Karadag

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey ,Paediatric Surgeon.

Nihat Sever

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey,Paediatric Surgeon.

Ozlem Kara

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey,Paediatric Surgeon.

Ali İhsan Dokucu

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey,Pediatric Surgeon, Professor.

Corresponding Author

Abdullah Yıldız

Şişli Etfal Training and Research Hospital, Department of Paediatric Surgery , İstanbul, Turkey, Paediatric Surgeon.

e-mail: nihon@superonline.com

ABSTRACT

Objective: Inguinal hernia is one of the most common dissease in childhood. Laparoscopic procedures in children are getting more popular common and in some cases surgeons find patent processus vaginalis during operation. Other than inguinal pathologies there is no concensus whether to close the patent processus vaginalis (PPV) or not. As generally accepted, increased intraabdominal pressure may cause clinical hernia in these cases. Therefore the answer of the question above ought to be whether any increased intraabdominal pressure in laparoscopic procedures can transforme these PPV into clinical hernia.

Methods: Between April 2009 and December 2010 the medical records of all paediatric patients whom treated laparoscopically for apandicitis were reviewed retrospectively. All cases with PPV have been followed-up in case of developing clinical hernia with telephone interviews or clinical evaluation.

Results: Of 101 patients, 84 cases have been inspected for internal inguinal ring opening. In total, the rate of internal opening was found 20.23% (17 cases).

Nine were right, 3 were left and 5 were bilateral. 17 cases (ten boys and seven girls) with PPV were followed up average 10.58 months (Range 2-16 months). Only one girl (5,88%) developed a left inguinal hernia in post operative sixth month.In this case an unnoticed sliding adnexia could be possible the reason of the hernia. None of the other patients had any hernia subsequently.

Conclusions: Short interval of increased intraabdominal pressure in laparoscopic procedures does not carry a risk of developing clinical hernia therefore any PPV found during laparoscopic procedures need not to be closed.

Key words: *Inguinal hernia; intra abdominal pressure; laparoscopy.*

ÖZET

Amaç: İnguinal herni çocuklarda en sık görülen hastalıklardan biridir. Laparoskopik işlemler çocuklarda gittikçe daha sık kullanılmaktadır. Laparoskopi sırasında zaman zaman iç delik ağızlarının açık olduğu insidental olarak saptanan açık iç delik ağızlarının kapatılıp kapatılmaması hakkında bir konsensus yoktur. Artmış karın içi basıncı herni gelişim nedenlerinden biridir. Bu durumda soru şu olmalıdır. Laparoskopik işlemler sırasından oluşan geçici karın içi basınç artışı patent prosessus vaginalis (PPV)'i inguinal herniye dönüştürür mü?

Yöntem: Nisan 2009 ile Aralık 2010 tarihleri arasında laparoskopik apendektomi yapılan hastalarda iç delik açıklıkları kaydedildi. İç delik ağızları açık olarak saptanan hastalar ve aileleri ileride oluşabilecek inguinal herninin klinik belirtileri açısından bilgilendirildi.

Sonuçlar: 84 hastanın iç delik ağızları değerlendirildi. 101 hasta bu süre içinde opere edildi. 17 olguda iç delik ağızları açık(**%20.23**) (10 erkek, 7 kız) 9 olguda sağ, 3 olguda sol ve 5 olguda ise bilateraldi. Sadece bir kız olguda (5,88%) post operatif 6. ayda sol inguinal herni gelişti. Bu olgu dışındaki hiçbir hastada klinik olarak herni gelişmedi. Hastaların ortalama takip süresi 10.58 ay idi.

Değerlendirme: Laparoskopik işlemlerdeki kısa süreli karın içi basınç artışı klinik herni gelişme riski taşımamaktadır ve kapatılmasına gerek yoktur.

Anahtar kelimeler: *İnguinal herni; intra abdominal basınç; laparoskopi.*

INTRODUCTION

Hernia is far most common surgical dissease in childhood. Indirect hernia consists of majority of all hernia form in children (1). There are many aetiological factors that cause inguinal hernia (2). Although the rate of hernia is estimated about 3%, asymptomatic patent processus vaginalis has been found up to 40% during various laparoscopic procedures (2,3). There is still a debate of which patent processus vaginalis (PPV) is prone to develop inguinal hernia.(4) Increased intraabdominal pressure has been blamed as one of the reason developing inguinal hernia in cases with PPV (2).

There seems a tendency of performing various procedures laparoscopically in children (3). In all laparoscopic approaches intraabdominal pressure increases temporarily (3,4). There is still debate whether the temporary increase of intraabdominal pressure tranform the PPV into a clinical hernia or not.

The aim of this study was to evaluate if intraabdominal pressure in laparoscopic operations carry any risk for developing of a clinical inguinal hernia. and require any repair in order to eliminate a potential inguinal hernia.

MATERIAL AND METHODS

Between April 2009 and December 2010 the medical records of all paediatric patients whom treated laparoscopically for apendicitis were reviewed retrospectively. Any patient with clinically significant hernia was excluded from the study. Any other selection criteria was not introduced. Under general anaesthesia, patients were placed in Trandelenburg's position. A 5-mm umblical port was inserted and two 3-mm cannulas were used for suturing. Pneumoperitoneum with pressure between 12- 13 mm Hg was established with carbon dioxide. Both internal opening of inguinal canal in all cases who underwent to laparoscpic appendectomy were inspected and recorded. If 3-mm cannulas could be entered easily to the hernia sac, the diameter of the internal ring was accepted 3 mm or more. No attempt was performed to repair the internal ring even its diameter estimated more than 3 mm. Lenght of the sac was not measured. Risk factors including premature delivery, family history were recorded. All parents were informed about the clinical evidence of hernia. All of the cases in our series were contacted with telephone interviews to determine the development of a inguinal hernia regularly after initial post operative first month evaluation. If any doubt appeared patients were called back for a clinical evaluation.

RESULTS

101 children of various ages underwent laparoscopic apendectomy. 84 of them have been inspected for internal inguinal ring opening during operation. Laparoscopy revealed 67 closed, 17 open internal rings (PPV). The rate of internal opening was found 20.23%. Of 17 PPV (medium ages 10.35 years, range 4-16 years), PPV was found right in nine cases, left in three cases, bilateral in five cases. All patients (ten boys and seven girls) with PPV were followed up average 10.58 months (Range 2-16 months). Only one girl (5,88%) developed a left inguinal hernia at post operative sixth month. She had an open hernia repair approach because her gonad caused a sliding hernia. No patient had any family history of hernia nor premature birth.

DISCUSSION

During various laparoscopic procedures surgeons are detecting more and more PPV without any clinical evidence (5). Although PPV has close accounts for nearly all inguinoscrotal abnormalities seen in childhood, laparoscopy demonstrates open PPV, but not exactly real hernias (2,4). We can call it true indirect hernia only when it contains some part of the abdominal viscera entering the inguinal region through a patent processus vaginalis.(lit) Therefore the concept of either having a hernia is based on the surgeon's or parents' visual inspection.

In literature some reports exist about spontaneous regression of early detected PPV but the cases in these series are much younger than our cases (6). Rowe et al reported that the processus vaginalis obliterates by 2 years of age in 60%, after that age obliteration of PPV is unlikely. (7) He also claimed that 20% of the children are prone developing an inguinal hernia but the remaining 20% will live out their lives with a clinically non-evident PPV.(7) This mean repairing of all PPV can prevent 20% hernia development and plus 20% unnecessary operations.

Although PPV wider than 2 mm and longer than 1 cm is believed to be much more prone to develop a hernia, but nobody exactly can suggest which one of the open PPVs develops into a clinical hernia. (3,4) This situation gives some confusion to the surgeons and make them uncertain to decide whether to close any open PPV or not. There are also some reports if all open PPVs are closed routinely with laparoscopic repair, clinical hernias appear much less frequency .(3)

But no report in literature was found about repairing of the PPV found in laparoscopic procedures unrelated with hernia operations.

Although PPV has been reported around 40% in various laparoscopic procedures, incidence of clinical inguinal hernia in children was found only around %3.(8) Huge differences between the rate of PPV and clinical hernia have raised some questions about conditions ending up with a clinical hernia in children. Factors contributing to the development of congenital inguinal hernia were connective tissue disorders, some urogenital disorders such as undescended testis. (9-11) All other factors are closely related to increased intra abdominal pressure such as ascites, ventriculoperitoneal shunts, cystic fibrosis, repair of exomphalos etc. (9-11).

No consensus exist about how much and what kind of elevated intra abdominal pressure would increase the risk of clinical hernia because there are different kind of intra abdominal pressures i.e. persistant high intra abdominal pressure such as ascites or intermittent pressure. Intermittent high intra abdominal pressure can be divided into two subgroups as long term such as cystic fibrosis with severe cough periods due to elevated intra-abdominal pressure from respiratory problems.(4-7) The short term subgroup is represented with laparoscopic approaches which can be single or multiple recurrent operations. Laparoscopic apendectomies in our study would be described as single short term intra abdominal pressure.

Some discussion found about closing of the PPV because risk of developing hernia in literature but all these discussions were mainly based on preventing metochronous hernia developing in laparoscopic hernia repair.(1,4) Most common laparoscopic presedure in childhood was appendectomy which needs some degree of elevated intra-abdominal pressure between 10- 13 mmHg.(4) These operations usually were lasted less than an hour.(3,4,8).

In our study we observed no postoperative hernia developing in our patients with PPV except one girl. In this case sliding fallopian tube could have been responsible for developing hernia. Hernia prevelance in either intermittent or continue elevated intraabdominal pressure has been found increased. (12) The reason of this prevelance can be due to duration of the situation. Short period of the laparoscopic procedure can be insufficient for developing an inguinal hernia. In addition, elevated intraabdominal pressure would enlarge the internal ring and may cause relatively wider apperance.

Inflammation of the intra abdominal viscera make the procedure more difficult and may also carry the risk of spreading the enfectious organism to all around the area of the internal inguinal ring. But another question still exists whether repeated laparoscopic procedures would increase the risk of developing hernia in cases with PPV in future.

CONCLUSIONS

We conclude that we are unable to find any clinical evidence to support the hypothesis that a hernia in cases with PPV might develop due to short interval of increased intraabdominal pressure in laparoscopic procedures therefore closure of any PPV found in laparoscopic procedures is not necessary.

Table 1

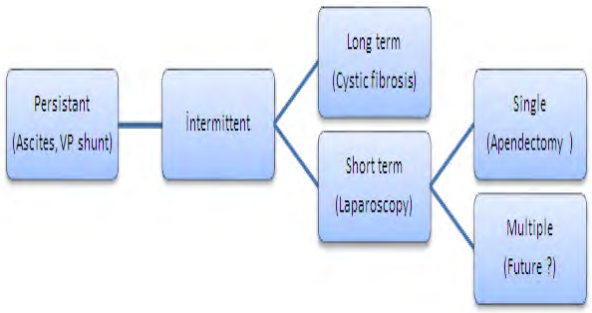

Table-I: *Different types of intra abdominal pressures.*

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