İzmir Eğitim ve Araştırma Hastanesi Tıp Dergisi (Medical Journal of İzmir Hospital) 22 (3): 125-129, 2018

ANASTOMOZ KAÇAĞINI SAPTAMAK İÇİN YENİ BİR YÖNTEM: MESANE İÇİ BASINÇ ÖLÇÜMÜ

A NOVEL METHOD TO PREDICT ANASTOMOTIC LEAKAGE: INTRAVESICAL PRESSURE

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Keywords: Anastomotic leakage, intravesical pressure, low anterior resection

Anahtar Sözcükler: Anastomoz kaçağı, intravezikal basınç, düşük anteriyor rezeksiyon

Yazının alınma tarihi: 14.07.2018 Kabul tarihi: 21.07.2018 Online basım: 23.07.2018

SUMMARY

Introduction: *Low anterior resection for rectal carcinoma is a technical challenge for all surgeons. It is a standart operation for rectal cancer and allows lower level anastomosis which preserves the anal sphincter. Based upon the fact that, intravesical pressure is a reflector for intraabdominal pressure, we suggest that it can also be used to predict anastomotic leakage because of intraabdominal changes that caused by this phenomenon.*

Materials and Method: *Fifty patients who undergone low anterior resection (who had extra peritoneal anastomosis) for rectal cancer between January 2015 and January 2016 were included in the study. Patients' intravesical pressure levels of postoperative 5 days were all recorded.*

Results: *There were three patients who had anastomotic leakage. Intravesical pressure levels of this three patients were higher than who did not have any anastomotic leakage.*

Conclusion: *Intravesical pressure measurement seems to be a useful tool to predict an anastomotic leakage especially after postoperative third day. Of course our study is limited becasue of the small number of anastomotic leakage group. We think that it deserves to study this subject in a larger scale.*

ÖZ

Giriş: *Rektal karsinom için low anterior rezeksiyon, tüm cerrahlar için teknik bir zorluktur. Rektal kanser için standart bir ameliyattır ve anal sfinkter koruyucu aşağı seviyeli anastomoz sağlar. Mesane içi basıncın intra-abdominal basınç için bir gösterge olması gerçeğine dayanarak, anastomoz kaçağını bu durumun neden olduğu karın içi değişiklikler nedeniyle öngörmek için de kullanılabileceğini düşünüyoruz.*

Gereç ve Yöntem: *Ocak 2015 ile Ocak 2016 arasında rektal kanser nedeniyle low anterior rezeksiyon (ekstra peritoneal anastomozu yapılmış olan) geçiren 50 hasta çalışmaya dahil edildi. Hastaların intra vezikal basınç düzeyleri, postoperatif ilk 5 gün boyunca kaydedildi.*

Bulgular: *Anastomoz kaçağı olan üç hasta vardı. Bu üç hastanın intra vezikal basınç ölçüm düzeyleri anastomoz kaçağı olmayan hastalaradan daha yüksek bulundu.*

Sonuç: *İntravezikal basınç ölçümü, özellikle postoperatif 3. günden sonra anastomoz kaçağını öngörmek için yararlı bir yöntem gibi gözükmektedir. Tabii ki bizim çalışmamız, anastomoz kaçağı olan grubun çok az olması nedeniyle sınırlıdır. Çok merkezli prospektif çalışmalara ihtiyaç vardır.*

INTRODUCTION

Low anterior resection (LAR) for rectal carcinoma is a technical challenge for all surgeons. It is a standart operation for rectal cancer and allows lower level anastomosis which preserves the anal sphincter. With the aid of the circular stapling devices, these operations became more feasible.

Various postoperative complications may occur in rectal cancer patients undergoing LAR. Anastomotic leakage is the most morbid complication after LAR, with reported incidences ranging between 1.8 % and 10.4 % (1,2). Peritonitis and sepsis may require reoperations and increase mortality rates (3). Also anastomotic leakage is a risk factor for local recurrence and has a significant impact on disease free and overall survival (4).

Male gender, preoperative radiation theraphy, high body mass index (BMI), hypoalbuminemia, use of diverting stoma, low level anastomoses, several biochemical parameters are all discussed and implicated as predictors of anatomotic leak by previous studies but their definitive role is still under investigation.

Here we investigated intravesical pressure (IVP) changes after LAR for rectal cancer. Based upon the fact that, bladder pressure is a reflector for intraabdominal pressure (IAP) (5), we suggest that it can also be used to predict anastomotic leakage because of intraabdominal changes that caused by this phenomenon. We measured IVP using a technique defined in the recent literature. However, there are still some arguments about the measurement technique.

IVP measurement is a highly preferred method because of its ease of use and it is a reliable method for detecting the increase in IAP (6). Intermittent IAP measurement with bladder catheter is a simple measurement method used in clinical practice. IVP measurement through a foley catheter can be accepted as the current standart to monitor intraabdominal pressure, and therefore intraabdominal hypertension and abdominal compartment syndrome.

MATERIALS AND METHODS

Fifty patients who undergone LAR (who had extra peritoneal anastomosis) for rectal cancer between January 2015 and January 2016 in Turkey Yüksek İhtisas Teaching and Research Hospital were included in the study. Due to the retrospective nature of this study, local ethic committee approve was not taken (A Retrospective clinical cross-match study).

Age, gender, BMI, neoadjuvant therapy status, operation type, length of hospital stay, postoperative complications; especially anastomotic leakage, were recorded. Intra-vesical pressure (IVP) was measured for following five days postoperatively using the technique described below. The normal range of IVP was received as 0–7 cmH2O (7). IVP was measured as follow: A foley catheter was intubated into the bladder in supine position and clamped from the distal part of aspiration port after completely draining of the bladder. Then 50 ml of sterile saline was applied into the bladder. The catheter was connected to a water manometer. The reference point was symphisis pubis. The pressure level was the height of the water column in centimeters through the manometer with “0 point” referring to the level of symphisis pubis (8).

We could only analyse descriptive statistics because none of patient character groups reached number of thirty. We especially investigated the anastomotic leakage group; and so particullarly analysed the IVP levels of postoperative five days. We analysed if they had any difference from the patients who did not have anastomotic leakage. Of course we could not analyse it through any statistical data; instead we analysed the levels one-by-one for each of the three patients who had anastomotic leakage during the postoperative course.

RESULT

Fifty post-abdominal surgery (LAR for rectal cancer) patients were included in this study. Twenty three of them were females. The mean age was 60.4 ± 12.1 years. Mean BMI was 25.6.

Twenty one patients received neoadjuvant chemoradiotherapy for rectal cancer. Ten patients operated laparoscopically whereas remaining 40 patients had traditional open LAR. Median length of hospital stay was 8 days (6 - 96).

Postoperative complications are demonstrated in Table 1.

There were three patients with anastomotic leakage. IVP levels for postoperative five days are demonstrated in Table 2. Other 47 patients did not have any anastomotic leakage. Of these three patients who had anastomotic leakage; one of them was re-operated and the other two patients were managed conservatively.

IVP levels of three patients who had anastomotic leakage are demonstrated in Table 3.

In Table 2 we demonstrated both mean and median values. Basically this group of 47 patients must be evaluated with mean values. But in the following table (Table 3) we had three patients. Of course this two groups can not be evaluated statistically; but in an attempt to get an idea we gave the median values in Table 2.

DISCUSSION

Anastomotic leakage is a major concern after LAR for rectal cancer. Anastomotic leak rate varies between 1 % and 40 %. This rate depends on the resection type and the definition of leak; much more higher with the extra peritoneal anastomosis. This concern is not only about patient's postoperative morbidity and mortality but it also affects local recurrence and overall survival (11).

We emphasize only anastomotic leakage through the other complications of LAR in our discussion. Thats because, none of the patient groups in our study reached number thirty to do any confidential statistical analysis but because IVP measurement could be a simple method for predicting this complication, we think that it deserves to investigate even with these statistical difficulties.

Table 1. Postoperative complications

	Frequency (n)	Percent (%)
None	33	66
Anastomotic leakage	3	6
Surgical site infection	5	10
Neurapraxia with arm	2	4
Hemorrhage	2	4
Ileus	4	8
Urinary retention	1	2

Table 2. IBP levels of the patients who did not have anastomotic leakage

Postoperative Period	First day	Second day	Third day	Fourth day	Fifth day
n	47	47	47	47	47
Mean (cmH2O)	17.76	16.02	14.02	11.76	8.76
Median (cmH2O)	18	15	15	10	8
Std. Deviation (cmH2O)	5.31	5.46	4.99	5.25	5.05
Minimum (cmH2O)	8	6	5	5	3
Maximum (cmH2O)	28	26	26	25	27

Table 3.IBP levels of three patients who had anastomotic leakage

	First day	Second day	Third day	Fourth day	Fifth day
Patient 1 (cmH2O)	25	23	22	21	25
Patient 2 (cmH2O)	8	6	13	15	22
Patient 3 (cmH2O)	25	23	20	18	17
Median (cmH2O)	25 (8-25)	23 (6-23)	20 (13-22)	18 (15-21)	22 (17-25)

Local and systemic organ dysfunctions occur after IAP increase, and therefore this is associated with increased morbidity and mortality (12). Despite these adverse clinical scenarios IAP is not routinely measured in clinic. Its measurement is usually used in intensive care units; especially while monitoring abdominal compartment syndrome. In our study we investigate if this increase in IAP levels was correlated with anastomotic leakage after LAR. We know that major anastomotic leakage that requires an operative intervention causes peritonitis leading intraabdominal hypertension. Based on this principle we investigate if IVP measurement could be used as a reflector for intraabdominal hypertension and so as a precursor of anastomotic leakage.

First we should mention about our methodology that we use while obtaining IVP levels. Our patients were in supine position and so head of their beds had no increase in height. In several studies it was mentioned that IVP measurement differ with body positioning (9, 10). Especially semi-recumbent position (with 30 – 45 degrees up of head of the bed) significantly increases IVP measure. So when studies involve IVP measurement or when giving the measured levels of IVP, one should describe the patient's position with the technique to interprete the results correctly. In our study as we mentioned above; our patients were in supine position (11,12).

IVP is more frequently measured via bladder. Bladder technique is simple and non-invasive; so it is accepted quitely by the clinicians. On the other hand IAP measurement can be made directly and also continously; but its clinical validation is a subject of debate (13,14). Bladder technique is especially exhibited and discussed in a study (5). In the same study it was advocated that the optimum volume of bladder instillation was 50 ml with saline. In an another study that subsequently published, this finding was demonstrated and suggested (13). However instillation volume into the bladder is still a subject of debate, and also bladder tecnique is not a gold standart (there is no gold standart obtaining true IAP non-invasively); we used 50 ml of saline during our measurements via bladder technique.

With these fifty patients, our rate of mostly seen complications (anastomotic leakage (6 %) and surgical site infection (10 %)) was comparable with the literature. As we mentioned above; one patient had an re-operation because of anastomotic leakage, remaining two patients did not have any operation, just medical therapy.

As we analysed our results; we observed a gradual decline in the IVP levels with the patients who did not have anastomotic leakage. In one study observing postoperative intraabdominal pressure changes after rectal resection (15); it was stated that IAP levels measured by bladder technique were high during postoperative two days, and decrease after postoperative two days. This situation was mostly attributed to the resolving of the paralytic ileus. In our results we reported a gradual decline but this decline was more slowly and amount of decrease was smaller during postoperative two days. So we can say that our results were similar too. After these postoperative two days IVP levels were decreasing three units daily in our results. Improving peritoneal irritation, healing inflammation and turning back of intestinal peristalsis and elasticity of the abdominal walls, absorbtion of the liquids, cessation of obstruction if the tumour is obstructing are all causes of this condition.

On the other hand; results of three patients who had anastomotic leakage were similar with the patients who did not have anastomotic leakage during the postoperative two days. Similarly IVP levels decreased with smaller units daily during the postoperative two days than the other days. But in the following days we did not observe the same decrease with the levels as the non-anastomotic leakage group had. Also there was an elevation with the levels of two patients who had anastomotic leakage beginning from the third postoperative day. Remaining one patient who had anastomotic leakage also had high levels of IVP; but his IVP level decreased from 25 cm H_2O to 17 cm H_2O. 17 cmH_2O can be accepted as high when it is compared with the levels of the non-anastomotic leakage group for the fifth postoperative day.

CONCLUSION

All of these results demonstrated that IVP levels are generally has a tendency to decrease especially beginning from the third postoperative day on a normal postoperative clinical setting. When this decline occurs waveringly or if there is an increase with the measured levels of IVP, one should keep in mind the probability of an anastomotic leakage; which is a catastrophic complication and needs an immediate intervention.

Of course our study is limited because of the small number of patients in the anastomotic leakage group; but IVP measurement seems to be a useful tool to predict an anastomotic leakage. We think that it deserves to study this subject in a larger scale.

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SB İZMİR EĞİTİM VE ARAŞTIRMA HASTANESİ TIP DERGİSİ YAZIM KURALLARI

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- Dergide yayınlanacak yazılar önce dergi editörünce değerlendirilir. Bu aşamada yazının red edilmesi veya kabulü söz konusu olabilir. Editör tarafından yazı en az iki danışmanın incelemesine gönderilir. Hakem değerlendirmesi ile kabul edilen yazıların basılıp basılmaması ve basılma zamanı ile ilgili son söz baş editöründür. Yazıların bilimsel, etik ve hukuki sorumlulukları yazarlarına aittir. Çalışmalarda Helsinki bildirgesine uyulmalıdır. İlaç, klinik araştırmalar, deneysel hayvan çalışmalarında Sağlık Bakanlığının ilgili yönetmeliklerinde belirtilen Bakanlık ve yerel etik kurul izinleri alınmalı bunların tarih ve sayı numarası belirtilmelidir. Çalışma insanlar üzerinde yapılmışsa gerekli izinler alınmalı ve kişilik hakları korunmalıdır. Tüm çıkar çatışması durumları vurgulanmalı, yoksa olmadığı belirtilmelidir. Bu dergiye gönderilen yazılarda yazarlar "yazarlık-authorship" kriterlerini kabul etmiş sayılırlar. Her yazar yazıdaki katkısını yazı ile birlikte göndereceği mektupta (cover letter) belirtmelidir. Yazarlar yazının her bölümünden ve tamamından sorumludurlar.

- Dergi ile iletişimi yazışma adresindeki yazar yapar. Yazışma adresindeki yazarın sorumlulukları; yazının ilk halinin dergiye gönderimesi, yazının bilimsel içeriği ve doğruluğu, revizyonu, basıma uygun son halinin hazırlanması, basım ile ilgili ücret varsa ödenmesi, yayın hakkı devir sözleşmesinin tam olması, yazı ile ilgili tüm soruların cevaplanmasında muhatap olması, etik konularda sorumlu olmasını kapsar.

- Çok merkezli çalışmalarda tüm yazarlar tek tek yukarıdaki konularda sorumludurlar. Editör, yazının durumu ile ilgili bilgiyi yazar dışında kimseyle paylaşmaz. Editörler kurulu belirli aralıklarla toplanıp yazıların son durumunu değerlendirir. Yazıların durumu e-posta ile yazışma adresindeki yazara gönderilir. İlaç ve deneysel hayvan çalışmalarında Sağlık Bakanlığının ilgili yönetmeliklerine uygun olarak etik kurul izni alındığı belirtilmelidir. Çalışma insanlar üzerinde yapılmışsa gerekli izin alınmalı ve kişilik hakları korunmalıdır.

- Araştırmalara yapılan nakit veya bağış şeklindeki yardımların hangi kuruluşlarca yapıldığı belirtilmelidir.

Yayınlanması istenen yazılarda aranan koşullar aşağıdadır.

1. Yazılar başka bir dergide yayınlanmamış olmalı.
2. Yazılar Türkçe ve İngilizce olarak hazırlanmalıdır.
3. Kaynakları ile birlikte araştırma yazıları 8 olgu sunuları 4 daktilo sayfasını aşmamalıdır.
4. Yazıların üst, alt ve yanlarda en 3 cm. boşluk bırakılarak yazılmalıdır. Yazımda doc veya doc. x uzantısı kullanılmalıdır.
5. Araştırma yazılarında izlenecek sıra: Türkçe başlık (büyük harf ile)-İngilizce başlık (büyük harf ile)-yazarların adları ve soyadları (soyadlar büyük harf ile)-yazarların açık iş adresleri-Öz (Türkçe, 50-200 sözcük)-anahtar sözcükler (Türkçe)-Abstract (İngilizce 50-200 sözcük)-keywords (İngilizce)-Giriş-Gereç ve Yöntem-Bulgular-Tartışma-Sonuçlar-Kaynaklar.
6. İngilizce başlık (Büyük harf ile)-Türkçe başlık (Büyük harf ile)-Yazarların adları ve Soyadları-Yazarların açık iş adresleri-Öz (Türkçe)-Abstract-Keywords-Introduction-Material and Method-Results-Discussion-References. Özler yapılandırılmış(structured) olmalıdır. Türkçe özde; giriş, gereç ve yöntem, bulgular ve sonuç, ingilizce abstract; introduction, material and methods, results ve conclusion bölümleri içermelidir.
7. Yazı başka bir yerde sunulmuş ise ve/veya bir kurumun desteği ile gerçekleştirilmiş ise; Dipnot şeklinde ilk sayfada belirtilmelidir.
8. Yazıya ait tabloların her biri ayrı kağıda ve başlıkları ile birlikte yazılmalı, sıra numarası verilmelidir.
9. Şekillere (grafik, fotoğraf ve çizelgeler) sıra numarası verilmeli ve her şeklin altına numarası ve açıklaması bulunmalıdır.
10. Araştırma yazıları için en çok 3 ve olgu sunumları için 4 şekil kabul edilir. Şekil ve grafikler için çini mürekkebi ile aydinger kağıdına şablonla çizilmeli ve ofset basıma uygun kalitede olmalıdır. Resimler JPEG formatında ve 300 dpi olmalıdır. Şekil alt yazıları ayrı bir kağıda yazılmalıdır. Şekil ve resimler metin içine yerleştirilmemelidir. Metnin sonunda ayrı basılmalıdır. Renkli fotoğraf sisteminde tüm harcamalar yazarlar tarafından karşılanır.
11. Otomatik sayfa numaralandırılması yapılmamalıdır.
12. Kaynakların tümü yazıdaki geçiş sırasına göre yazılmalı ve metinde parantez içinde gösterilmelidir. Yazı içinde kullanılan kaynakların tümünün kaynaklar listesinde yer alması gerekmektedir. Kısaltmalar İndex Medicus'a göre yapılmalı, kısaltılmış dergi ve yazar adlarından sonra nokta konmamalıdır.

Kaynakların formatları şu şekilde olmalıdır;

a) Dergiler (6 ve daha az sayıdaki yazarlı makaleler): Vega KJ, Pina I, Krevsky B. Heart transplantaiton is associated with an icreased risk for pancreatibiliary disease. Ann Intern Med 1996; 124(2): 980-3.

b) Dergiler (6'dan fazla yazarlı makaleler): Parkin DM, Clayton D, Black RJ, Masuyer E, Friedl HP, Ivanov E, et al. Childhood leukaemia in Europe after Chernobyl: 5 year follow-up. Br J Cancer 1996; 73(2): 1006-12.

c) Dergiler (ekli sayı): Payne DK, Sullivan MD, Massie MJ. Women's psychological reactions to breast cancer. Semin Oncol 1996; 23 (1 Suppl 2): 89-97.

d) Kitaptan bölüm:

1) Çok yazarlı, editörlü kitaptan bir bölüm: Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. Hypertension: pathophysiology, diagnosis, and management. 2nd ed. New York: Raven Pres; 1995: p. 465-78.

2) Tek yazarlı kitap: Ringseven MK, Bond D. Gerontology and Leadership Skills for Nurses. 2nd ed. Albany: Delmar Publishers; 1996.

12. Tüm yazılar bozyakadergi@gmail. com adresine gönderilmelidir. Ayrıca baskı sürecini kolaylaştırmak amacıyla metin Windows altında çalışan bir kelime işlem programıyla hazırlanmış olarak ve CD ye basılmış olarak dergi sekreterine teslim edilmelidir.

13. Anahtar Kelimeler Türkiye Bilim Terimlerinden (MeSH; Medical Subject Headings) seçilmelidir (http://www. bilimterimleri. com).

14. Gönderilen tüm yazılara, yazarın yazışma adresinin de yer aldığı Yayın Hakkı Devri Sözleşmesi eklenmelidir.

15. Yazarlara yazılarının yayınlandığı sayı ücretsiz olarak gönderilir, maddi ödeme yapılmaz ve ayrı baskı verilmez.

YAYIN HAKKI DEVRİ SÖZLEŞMESİ

Biz aşağıda isim ve imzaları bulunan yazarlar SB İzmir Eğitim ve Araştırma Hastanesi Tıp Dergisine yayınlanmak üzere gönderdiğimiz yazımız başka bir dergide değerlendirilmek veya/ve yayınlanmak üzere gönderilmemiştir. Yazımızın kabulü halinde, düzeltmelerle birlikte her türlü yayın hakkını, yazının yayınlandığı günden itibaren SB İzmir Eğitim ve Araştırma Hastanesi Tıp Dergisi'ne devrettiğimizi kabul ederiz.

Tarih: ..../......./......... Yazının Adı: ....

....

Yazarların Adı: Yazarların İmzası:

....

KONTROL LİSTESİ

1. Başlık (Türkçe).
2. İngilizce başlık.
3. Türkçe özet.
4. İngilizce özet.
5. Türkçe ve İngilizce anahtar kelimeler.
6. Makale (bir orijinal,iki fotokopi).
7. Kaynaklar.
8. Tablo-Çizelge-Resim alt yazıları.
9. Yazışma adresi-Telefon-e-posta.
10. Yayın hakkı devri sözleşmesi.
11. CD.