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Original Article

The comparison of hemorrhoidal laser procedur and classical (ferguson) surgical hemorrhoidectomy methods

Hemoroidal lazer işlemi ile klasik(ferguson) cerrahi hemoroidektomi yöntemlerinin karşılaştırılması

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Abstract

Aim: Generally, pathological hemorrhoids are more common in patients aged 45-65 years. Treatment options may vary according to the degree of hemorrhoids.We aimed to compare surgical treatment with classical surgical hemorrhoidectomies(CH,Ferguson procedure) and hemorrhoidal laser procedur methods(HeLP)in the treatment of grade III and grade IV hemorrhoids.

Material and Methods: Univariate analyses were performed using the Student's t test for continuous variables and chi-squared test for dichotome variables. Data were analyzed with SPSS™for Windows18(SPSS, Chicago,IL).All cases over the age of 18 and under the age of 65 without any malignancy diagnosis who underwent HeLP and CH methods due to gradeIII, gradeIV hemorrhoid disease were included in the study.

Results: Totally 187 cases included in this study.The patients was 66.8%(n:125,male)vs.female 33.2%(62)($p<0.05$).The distribution of patients according to who underwent HeLP by gender,it was found as[71.8%(n:89)male vs. female28.2%(35) ($p<0.05$)]. For CH this distrubition rate was[male57.1%(n=36)vs.female42.9%(n=27)$P<0.05$]. The complication rates between for procedures weren't found statistically different from each other.CH[(n=66)(Complicative cases 9.5% (n:6)vs. HeLP[(n=116)complicative cases 6.9%(n:8)($p=0.56$)].

The difference between complication rates according to gender is examined;The complication rates of both procedures were similar in both gender too[64.3%(9)vs.35.7%(5)($p=0.8$)].There wasn't statistically significant results found in the comparison made in terms of the choice of procedure in terms of the average age.The patients who underwent CH(40,9±13.7)years old vs.HeLP(38,2±13,4)years old(p:0.2)was found.The bleeding complications were found significantly higher in the HeLP than in the CH[HeLp vs.CH for hematoma;8(89.9%)vs1(11.1%)($p<0.02$)].The effects of HeLP on complications in terms of number of laser shots,wavelength,energy and application time were examined, statistically significant results weren't.

Conclusion: The male population applying for hemorrhoid treatment was found to be significantly younger than females. The male gender preferred the HeLP procedure significantly compared to the females and the complication of hemorrhage was significantly higher in the laser procedure.

Keywords: Hemorrhoids , Laser ,classical hemorrhoidectomy , HeLP,comparison

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Öz

Amaç: Genellikle patolojik hemoroidler 45-65 yaş arası hastalarda daha sık görülür. Tedavi seçenekleri hemoroidin derecesine göre değişiklik gösterebilir. Grade III ve grade IV hemoroid tedavisinde cerrahi tedaviyi klasik cerrahi hemoroidektomi(KH,Ferguson prosedürü) ve hemoroidal lazer işlem yöntemlerini(HeLP) ile karşılaştırmayı amaçladık.

Gereç ve Yöntemler: Tek değişkenli analizler, sürekli değişkenler için Student t testi ve ikili değişkenler için ki-kare testi kullanılarak yapıldı. Veriler SPSS™ for Windows18(SPSS, Chicago,IL) ile analiz edildi. 18 yaş üstü ve altı tüm vakalar Evre III, Evre IV hemoroid hastalığı nedeniyle HeLP ve KH yöntemleri uygulanan malignite tanısı olmayan 65 hasta çalışmaya dahil edildi.

Bulgular: Bu çalışmaya toplam 187 olgu dahil edildi.Hastalar %66.8(n:125,erkek) ve %33.2(62)(p<0.05) kadın idi.Hastaların cinsiyete göre HeLP yapılanlara göre dağılımı, [%71,8(n:89)erkek - kadın %28,2(35)(p<0,05)] olarak bulundu. KH için bu dağılım oranı[erkek %57,1(n=36)vs.kadın %42,9(n=27)P<0,05]. İşlemler arasındaki komplikasyon oranları istatistiksel olarak birbirinden farklı bulunmadı. KH[(n=66)(Komplikatif vakalar %9,5 (n:6) ve HeLP[(n=116)komplikatif vakalar %6,9(n:8))(p=0.56)].

Cinsiyete göre komplikasyon oranları arasındaki fark incelendiğinde; Her iki işlemin komplikasyon oranları her iki cinsiyette de benzerdi[64.3%(9)vs.35.7%(5)(p=0.8)].İstatistiksel olarak anlamlı bir sonuç yoktu. yaş ortalaması açısından işlem seçimi açısından yapılan karşılaştırmada bulundu.KH(40,9±13,7)yaş ile HeLP(38,2±13,4)yaş uygulanan hastalar(p: 0.2) bulundu. Kanama komplikasyonları HeLP'de KH'ye göre anlamlı olarak yüksek bulundu[Hematom için HeLp vs.KH;8(89.9%)vs1(11.1%)(p<0.02)]. Laser atış sayısı, dalga boyu, enerji ve uygulama süresi açısından incelendi, istatistiksel olarak anlamlı bir sonuç çıkmadı.

Sonuç: Hemoroid tedavisi için başvuran erkek popülasyonun kadınlara göre anlamlı olarak daha genç olduğu saptanmıştır. Erkek cinsiyeti kadınlara göre anlamlı olarak HeLP işlemini tercih etmekte ve lazer işleminde kanama komplikasyonu anlamlı olarak daha yüksek bulunmuştur.

Anahtar Kelimeler: Hemoroid , Lazer ,klasik hemoroidektomi , HeLP,karşılaştırma

Introduction

Hemorrhoidal disorders are one of the most common benign anorectal diseases known. The worldwide prevalence of hemorrhoids in the general population has been reported to be 4.4% (1).

HD develops due to the increased blood flow in the superior rectal artery, which causes dilatation of the hemorrhoidal vascular structures. However, the disruption of the supporting tissue also causes the hemorrhoidal pouches to sag downwards(2).

Almost one third of patients with hemorrhoidal complaints apply to the hospital for doctor's advice. It has been stated in the literature that the age distribution generally fits a Gaussian distribution, with the highest incidence between the ages of 45 and 65 and decreasing after the age of 65 (3, 4). In addition, men experience hemorrhoidal disorders more frequently than women (5).

Initially, the treatment approach of HD consists of lifestyle changes (nutrition with fiber foods, etc.) and phlebotonic medical treatment. If conservative treatment is not sufficient, interventional procedures are used in HD treatment(6)]. Open hemorrhoidectomy (HC) intervention was first described and described by Milligan-Morgan (7) in 1937, and it remains the gold standard of interventional therapy for advanced stages of HD today. The most prominent disadvantages are post-operative pain and complications associated with complications resulting from excision of hemorrhoidal tissue(8). For the above reasons, various non-excisional treatments such as rubber band ligation (RBL), mucopexy (MP) or laser treatments are also available(6,9). Laser application without excision was first introduced in 1998 by Barr et al. (10) by an experimental animal study. has been revealed. Karahaliloğlu and et al. were shared in their study results for first and second degree hemorrhoids with the laser obliteration, in 2007(11). On the other hand, although laser applications, which offer an excision-free treatment option, constitute interventional treatments for HD treatment, it has been emphasized in the literature that the level of evidence is low (6, 9). In this study, we aimed to share our results in the current literature by comparing classical hemorrhoidectomy and laser application with hemorrhoid obliteration.

Material and methods

The study was approved by Çukurova University Faculty of Medicine Ethics Committee dated July 22, 2022 the ethics committee decision the number of 124. The patients who underwent laser hemorrhoidoplasty procedure and open

surgical hemorrhoidectomy operations, which were applied to patients with third and fourth degree hemorrhoids between 2020-2022, were examined in addition to demographic features such as age and gender, as well as whether there was a significant factor determining the procedure chosen by the patients, and complications according to the procedures applied. It was also investigated whether there is a difference in terms of complications according to the duration of laser hemorrhoidoplasty and the energy wave length given. However, patients under 18 years of age or older than 65 years ,diagnosed with fissure, fistula, anorectal diseases and malignant diseases, and patients whose data were found to be incomplete or inconclusive were excluded from the study. Continuous variables were reported as mean and standard deviation, while categorical nominal variables were determined as a percentage of the total population. Continuous or discrete variables were considered as independent variables for comparison of differences between groups. In order to reveal the difference between independent groups, discrete variables were evaluated with the χ^2 test or Fischer's exact test for univariate analyzes, while Student's t test was used for the distribution status of continuous variables. Data were analyzed with SPSS™ for Windows 18 (SPSS, Chicago, IL).

Results

The total number of patients is 187; It was determined that the male population applied for the treatment of hemorrhoids significantly compared to the females [125(66.8%) male vs.62(33.2%) (p=0.045)] female (Table 1). It was also revealed that the males significantly preferred the hemorrhoidal laser procedure compared to the females[89(71.8%) vs.35(28.2%), p=0.043](Table 1).

The mean patient age was 39.1±13.5(18-79). The male population applying for hemorrhoid treatment was significantly younger than females [37.3 vs. 42.7 (p=0.014)] (Table 2). When it was examined whether there was an age difference according to the treatment methods chosen by all patients included in the study, no statistically significant difference was found[CH(n=63) (mean age =40.9±13.7) vs HeLP (n=124)(mean age =38.16±13.4) (p=0.2)] (Table 2).

Considering which of the applied procedures led to more complicating results, the complication rates between the procedures were not found statistically different from each other. [Classic hemorrhoidectomy [42.9%(n:6) vs. HeLP 57.1%(n:8)(p=0.56)] (Table3).

When the difference between complication rates according to gender is examined; The complication rates of both procedures were similar in both gender [male 64.3 %(9) vs. female 35.7%(5)(p=0.8)] (Table 4).

Table 1: Distribution of patients who underwent classical hemorrhoidectomy and laser hemorrhoidectomy in terms of gender

The cases who underwent classical hemorrhoidectomy and laser hemorrhoidectomy in terms of gender					
		GENDER		Total	P<0.05
		Male	Female		
CH	63	57.1%(n=36)	42.9%(n=27)	100%(n=63)	0.045
HeLP	124	71.8%(n=89)	28.2()n=35	100%(n=124)	
Total	187	66.8%(n=125)	33.2%(n=62)	100%(n=187)	0.043

Table 2: The comparison of the mean age for all patients by performed procedure and gender

	Comparison of mean age for all patients by gender	P<0.05
Male(n=125)	37.3 ±12.7	p=0.014
Female(=62)	42.7±14.5	
All patients mean age (n=187)	39±13.53	
	Comparison of mean age for all patients by performed procedure	
CH(n:63)	40,8571±13,72525	0.2
HeLP(n:124)	38,1613±13,39177	

Table 3: General complication rates in terms of applied procedures

Procedure* Complication					
			Complication		p<0.05
		n	No	Yes	
Procedure	CH	63	57(90.5%)	6(9.5%)	0.56
	HeLP	124	116(93.1%)	8(6.9%)	
Total cases		187	173 (91.9%)	14 (8.1%)	

Table 4 : Comparison and distribution of complication rates according to gender and procedure

		Complication		Total	P<0.05
		,00	1,00		
GENDER	The number of male cases	116	9	125	0.8
	The complication percentage within males	92,8%	7,2%	100,0%	
	The number of female cases	57	5	62	
	The complication percentage within females	91,9%	8,1%	100,0%	
Total	The number of total cases	173	14	187	
	The complication percentage of total cases	92,5%	7,5%	100,0%	
	The complication distrubition in terms of procedure				
	HeLp vs. CH for hematoma	8(89.9%) vs 1(11.1%)			0.02
	HeLP	Hematoma	8		
	CH		1		
	CH	Abscess	1		
	CH	Pain	2		
	CH	Hematoma and pain	2		

Discussion

Keighley MRB. et al. reported that men are affected by hemorrhoids more frequently than women (12). But furthermore, Parvez Sheikh et al. reported in their study that there was a slightly higher proportion of women in the cohort with hemorrhoidal disease in the general population [(52% versus 56%)(13)]. In our study, the male population was operated more often than the female population due to hemorrhoidal disease [125(66.8%) vs.62(33.2%)(Table 1)]. A.Senagore et al. reported in a study in which they compared laser and classical hemorrhoidectomy involving 86 patients in total, that they did not find a significant difference in preference for the type of procedure in terms of gender(14).Whereas in our study, when we compared the cases who underwent classical hemorrhoidectomy and laser hemorrhoidectomy in terms of gender; It was revealed that male gender preferred laser hemorrhoidectomy method compared to females [71.2%(89) vs.28.8%(36)(p<0.045)].

In terms of classical hemorrhoidectomy, the distribution of male and female cases was found as [57.1%(36) vs. 42.9%(27) (p<0.045)](Table 1). In our study, when the mean age of the patients who had hemorrhoidectomy operation was examined by gender, the mean age of the male gender was significantly lower than that of the female gender [37.3 ±12.7 vs. 42.7±14.5 (p=0.014) (Table 2). In the studies in the literature, it is stated that the highest incidence of hemorrhoidal age distribution is between the ages of 45-65, and it decreases after the age of 65 (3,4). Ismali SA et al. reported in their study that hemorrhoid cases were most common between the ages of 35 and 65. (15). On the other hand; In our study, the mean age of all patients who underwent hemorrhoidal treatment procedure was found to be 39±13.53, similarly (Table 2). There was not found any statistical significance results in comparison of mean age in terms of performed procedure (Table 2). In terms of complication rates; The comparison of the applied the procedures were not found statistically signifinannacy [Classic hemorrhoidectomy [n:6 (9.5%) vs. laser hemorrhoidectomy n:8(6.9%) (p=0.56)] .The overall complication rate of patients who underwent both procedures was 14 (8.1%)(Table 3). Whereas when we examine the distribution of complications as laser hemorrhoidoplasty and surgical hemorrhoidectomy; Interestingly, except for 1 case, almost all hematomas belonged to the laser procedure. Consequently our complication distrubition were hematoma n=9(2.4%), pus n=1(0.3%), pain(n=2 (0.5%), hematoma and pain 2(0.5%). 14 of 187 cases (3.7%) had complications(Table 4). Six cases, including the remaining pain, abscess, pain and hematoma, were seen after the classical hemorrhoidectomy operation (Table 4). When we scanned the literature in terms of complication distribution, after surgical hemorrhoidectomy; It has been stated that the most common complication in post-surgical hemorrhoidectomy is pain. On the other hand, early complications were listed as urinary retention (20.1%), bleeding (2.4-6%) and soft tissue infections (0.5%)(16-18). However, the complications that occur in the long term are respectively; anal fissure(1% -2.6%), anal stenosis(1%), fistula(0.5%), gas and/or stool incontinence (0.4%) development and recurrence of hemorrhoids(16-18). Statistically, hematoma development was significantly higher in laser application than in classical

hemorrhoidectomy. G.Longchamp et al. stated in their study that the most prominent intraoperative complications were bleeding and emphasized that they detected more in HeLP cases(8). In our study too; It was determined that bleeding complications were significantly higher in the hemorrhoidal laser procedure than in the classical hemorrhoidectomy operation. [HeLp vs. CH for hematoma;8(89.9%) vs 1(11.1%) (p<0.02)] (Table 4). In addition, there are studies in the literature stating that bleeding complication is the most common complication and most of them after classical hemorrhoidectomy (CH) (11,19-21) , as well as studies indicating that bleeding is more common after HeLP (8,22-24). In laser hemorrhoidectomy; The thermal effect caused by laser pulses is limited to the mucosa and submucosa and avoids perforation of the rectal tissue caused by overheating(25). Additionally, in this process, the laser beam at this wavelength, by means of a diode laser operating at a wavelength of 980 nm, creates maximum absorption specifically to the chromophores of the hemoglobin. As a result of high energy absorption in the arterial circulation; There is minimal damage to the mucosa in the surrounding tissue crossed by the laser beam and shrinkage of the vessel, however, the "contraction effect" that occurs in the submucosal arteries is the ultimate goal(25). Laser energy causes minimal discomfort to patients, anesthesia is not required for HeLP. If patients require sedation, mild intraoperative sedation can be applied(25). When the effects of laser hemorrhoidectomy on complications in terms of number of shots, wavelength, energy and application time were examined, no statistically significant results were found(Table 5).

Table 5: Showing the effects of laser hemorrhoidectomy on complications in terms of number of shots, wavelength, energy and application time

	Complication	n	Mean	Std. Deviation	P<0.05
Energy (watt)	,00	116	7,0345	,55059	0.68
	1,00	8	7,1250	,58248	
Time (second)	,00	173	126,4740	13,81967	0.28
	1,00	14	131,0714	14,69937	
Shot	,00	116	41,4914	5,42217	0.68
	1,00	8	42,3750	5,65528	
Wavelength	,00	116	661,5517	108,89647	0.79
		8	672,5000	112,34513	

Conclusion

In our study, the male gender preferred the hemorrhoidal laser procedure more frequently and the hemorrhoidal laser procedure created a risk of bleeding compared to the classical surgical method, no significant difference was found in terms of general complications except for these two cases, and it is thought that these results should be investigated with prospective multicenter studies in the next step.

Declaration of congress abstract

This study has not been published anywhere before and has not been presented in any congress.

Ethic

In this retrospective study, national and international ethical rules were complied with.

Conflict of Interest

No conflict of interest was declared by the authors. In addition, no financial support was received for this study.

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