

Association of Surgeon Age and Experience with Pilonidal Sinus Operation Technique

Cerrah Yaşı ve Deneyiminin Pilonidal Sinüs Operasyon Tekniği ile İlişkisi

Ramazan GÜNDOĞDU¹, Uğur TOPRAK²

ABSTRACT

AIM: Most surgeons continue to use classical methods of surgical treatment despite the introduction of minimally invasive approaches. This study aimed to evaluate the association of surgeon age and experience on Pilonidal sinus (PS) treatment method.

MATERIAL AND METHOD: Clinical data of patients who presented with PS and underwent surgical treatment between January 2011 and November 2021 in our hospital were retrospectively analyzed. Operation method was classified as classical or minimally invasive. Surgeons were divided into three age groups: 28–35 years, 36–45 years, and ≥46 years. Drain use, anesthesia type, and operation method were compared between age groups. Correlation of surgeon age and these variables was also evaluated.

RESULTS: In total, 253 patients were included for analysis (203 men and 50 women). Median age was 25 years (range, 16–64). The number of patients in the classical and minimally invasive groups was 155 and 98 patients, respectively. Use of minimally invasive surgery increased ($r = 0.153$) and drain use decreased ($r = -0.232$) as surgeon age and experience increased. Spinal anesthesia was the most frequently used anesthesia method; only 7.1% of patients underwent surgery using local anesthesia. There was no significant correlation between surgeon age and anesthesia type.

CONCLUSION: Classical surgical treatment of PS remains more common than minimally invasive approaches in our hospital. Use of minimally invasive approaches increased in conjunction with surgeon age and experience.

Keywords: Pilonidal sinus, minimally invasive approach, laser ablation

ÖZET

AMAÇ: Minimal invaziv yaklaşımların ortaya çıkmasına rağmen çoğu cerrah klasik cerrahi tedavi yöntemlerini kullanmaya devam etmektedir. Bu çalışmada, cerrah yaşı ve Pilonidal sinüs (PS) tedavi yöntemindeki deneyim arasındaki ilişkinin değerlendirilmesi amaçlanmıştır.

GEREÇ VE YÖNTEM: Ocak 2011-Kasım 2021 tarihleri arasında hastanemizde PS ile başvuran ve cerrahi tedavi uygulanan hastaların klinik verileri geriye dönük olarak incelendi. Ameliyat yöntemi klasik veya minimal invaziv olarak sınıflandırıldı. Cerrahlar 28-35 yıl, 36-45 yıl ve ≥46 yıl olarak üç yaş grubuna ayrıldı. Yaş grupları arasında dren kullanımı, anestezi tipi ve operasyon yöntemi karşılaştırıldı. Cerrah yaşı ile bu değişkenlerin korelasyonu da değerlendirildi.

BULGULAR: Analize toplam 253 hasta dahil edildi (203 erkek ve 50 kadın). Ortanca yaş 25 idi (aralık, 16-64). Klasik ve minimal invaziv gruplardaki hasta sayısı sırasıyla 155 ve 98 hasta idi. Cerrahın yaşı ve deneyimi arttıkça minimal invaziv cerrahi kullanımı arttı ($r = 0.153$) ve dren kullanımı azaldı ($r = -0.232$). Spinal anestezi en sık kullanılan anestezi yöntemiydi; hastaların sadece %7,1'i lokal anestezi ile ameliyat edildi. Cerrah yaşı ile anestezi tipi arasında anlamlı bir ilişki yoktu.

SONUÇ: Hastanemizde PS'nin klasik cerrahi tedavisi minimal invaziv yaklaşımlardan daha yaygın olmaya devam etmektedir. Cerrahın yaşı ve tecrübesi ile birlikte minimal invaziv yaklaşımların kullanımı artmıştır.

Anahtar kelimeler: Pilonidal sinüs, minimal invaziv yaklaşım, lazer ablasyon

¹Baskent University Faculty of Medicine, Department of General Surgery, Adana, Türkiye

²Baskent University Faculty of Medicine Department of Biostatistics, Ankara, Türkiye

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Sorumlu Yazar / Corresponding Author:

Ramazan GÜNDOĞDU
Address: Dadaloğlu mah. Serinevler 2591 Sok. No:4/A Yüreğir, Adana, Türkiye
Phone: +90 506 295 3570
Fax: +90 322 327 1276
E-mail: dramazang@gmail.com
orcid: 0000-0002-8799-3265

Yazar Bilgileri / Author Information:

Uğur TOPRAK: orcid: 0000-0002-2949-9189, mail: toprakugur@gmail.com

INTRODUCTION

Pilonidal sinus (PS) is a benign disease that can cause abscess, cellulitis, or recurrent sinus tracts in the sacrococcygeal region¹. Although various etiological theories have been proposed, the predominant view is that PS is an acquired condition associated with the presence of hair in the gluteal cleft. The hairs trapped in this slit traumatize the skin and cause secondary damage, leading to a foreign body reaction that can cause infection².

Although treatment mostly involves a surgical intervention, there is no standard treatment¹. In classical surgical treatment, the cyst is excised and either allowed to heal by secondary intention or closed primarily with sutures or a skin flap³. Most classical methods have been associated with delayed recovery, long hospitalization, loss of work and social activity, and PS recurrence⁴. Because of the demand for surgical techniques that minimize loss of work⁵, a variety of minimally invasive techniques have been developed^{6,7}. Surgeons have realized that they can customize PS treatment to the individual patient⁵. However, even though minimally invasive methods have been increasingly performed with good results, many surgeons rely on the classical approaches. In this retrospective analysis of PS operations performed in our hospital in the last 10 years, we examine the effect of surgeon age and experience on treatment method.

METHODOLOGY

This study was reviewed and approved by the Başkent University Medical and Health Sciences Research Board (Project no: KA21/526). The medical records of patients admitted to our hospital between January 2011 and November 2021 because of PS disease were retrospectively reviewed. Those who underwent surgical treatment and had no missing data were included for analysis. Patient age and gender, surgeon age, anesthesia type, operation type, drain usage, and sinus orifice information were recorded. Operation method was classified as classical or minimally invasive. Classical methods included excision with primary suture closure, excision with Karydakias flap, excision with Limberg flap, excision with rhomboid flap, and cleft lift. Minimally invasive methods included the Bascom procedure, Bascom procedure with marsupialization, and laser ablation. Surgeries were performed by 18 different surgeons who were divided into 3 age groups: 28–35 years, 36–45 years, and ≥46 years. Drain use, anesthesia type, and operation method were compared between age groups. Associations between operation method, drain use, and recurrence were examined. The correlations between surgeon age and drain use, anesthesia type, and operation method were also evaluated.

Statistical analysis

Statistical analyses were carried out using SPSS software version 25.0 (IBM Corp., Armonk, NY, USA). Normality of data distribution was evaluated using the Kolmogorov–Smirnov test. Normally distributed continuous data are presented as means with standard deviation; data with a non-normal distribution are presented as medians with range. Categorical variables are presented as numbers with percentage. Continuous data was compared using the Student's t test or Mann–Whitney U test as appropriate. Categorical variables were compared using the Pearson chi-square test. $P < 0.05$ was considered significant. Determine of the relationship of Surgeon Age with other variables Spearman Correlation Coefficient test was used.

RESULTS

In total, 253 patients were included for analysis (203 men and 50 women). Median age was 25 year (range, 16–64). Most surgeons (59%) were aged 36–45 years. Anesthesia method was spinal in 87.4%. A single sinus orifice was present in 167 patients (66%). The classical treatment group comprised 155 patients (61.3%). Among these, the most common procedure was excision with Limberg flap in 55 (21.74%). Ninety-eight patients (38.7%) were in the minimally invasive group. The most common procedure among this group was the Bascom procedure with marsupialization in 89 (35.18%;

Table 1. Frequencies and percentages of the variables

		Frequency (%) / Median (min - max)
Age		25(16-64)
Gender	Male	203 (80%)
	Female	50 (20%)
Surgeon age groups	28-35	57 (22%)
	36-45	149 (59%)
	≥46	47 (19%)
Anesthesia	Spinal	221 (87.4 %)
	Local	18 (7.1 %)
	General	14 (5.5 %)
Drain use	No	147 (58.1 %)
	Yes	106 (41.9 %)
Sinus orifis	1	167(66%)
	>1	86(34%)
Operation	Classical	155 (61.3 %)
	Excision + primer sutur closure	50 (19.76%)
	Excision + karydakias flap	7 (2.77%)
	Excision + limberg flap	55 (21.74%)
	Excision + rhomboid flap	4 (1.58%)
	Cleft lift	39 (15.42%)
	Minimally invasive	98 (38.7 %)
	Bascom	3 (1.19%)
	Bascom + marsupialization	89 (35.18%)
	Laser ablation	6 (2.37%)

Surgeons in the age group 28–35 years performed the operation in 57 patients. Cleft lift was the most frequently performed procedure in this age group (14 patients, 24.6%). Surgeons in the age group 36–45 years performed the operation in 149 patients. The Bascom procedure with marsupialization was the most frequently performed procedure in this age group (40.9%). In addition, all laser ablations were performed by surgeons in this age group. Finally, surgeons in the age group ≥46 years performed the operation in 47 patients. The Bascom procedure with marsupialization was the most frequently performed procedure in this age group 31.9%;

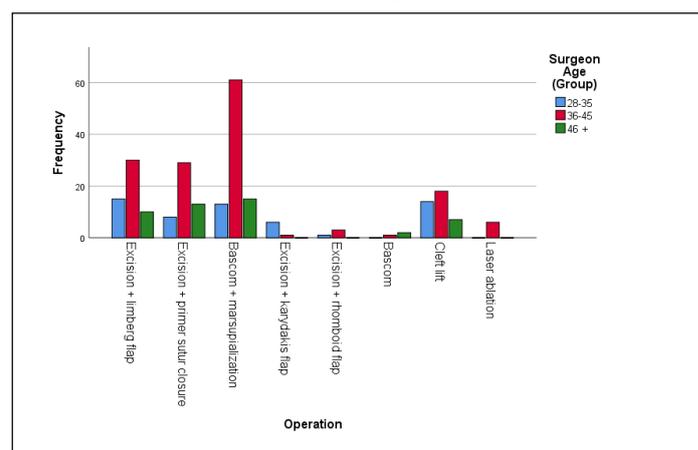


Figure 1

50.9% of the surgeons who used a drain were aged 36–45 years. Drain use and operation method significantly differed between the three surgeon age groups ($p = 0.018$ and 0.01 , respectively). 69.4% of the surgeons who performed a minimally invasive operation were aged 36–45 years. Spinal anesthesia was administered in 129 patients (58.4%). Type of anesthesia did not significantly differ between the three surgeon age groups

Table 2. Dependence of surgeon age with other variables

		Surgeon Age (Group)			p
		28-35(22%)	36-45(59%)	≥46 (19%)	
Drain Usage	No	24 (16.3 %)	95 (64.6 %)	28 (19%)	0.018 *
	Yes	33 (31.1 %)	54 (50.9 %)	19 (17.9 %)	
Operation	Classical	44 (28.4 %)	81 (52.3 %)	30 (19.4 %)	0.010 *
	Minimally invasive	13 (13.3 %)	68 (69.4 %)	17 (17.3 %)	
Type of Anesthesia	Spinal	54 (24.4 %)	129 (58.4 %)	38 (17.2 %)	0.126
	Local	1 (5.6 %)	10 (55.6 %)	7 (38.9 %)	
	General	2 (14.3 %)	10 (71.4 %)	2 (14.3 %)	

* p<0.05; Pearson Chi-square test was used.

Type of Anesthesia:	0.117	0.64
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* p<0.05; Spearman Correlation Coefficient test was used.

A significant negative correlation was found between surgeon age and drain use ($r = -0.232$). A significant positive correlation was found between surgeon age and operation method ($r = 0.153$). Surgeon age and anesthesia type were not significantly correlated

Table 3. The relationship of Surgeon Age with other variables

	Surgeon Age	
	r	p
Drain Usage	-0.232	<0.001 **
Operation Type	0.153	0.015 *
Type of Anesthesia	0.117	0.64

* p<0.05; Spearman Correlation Coefficient test was used.

Surgeons preferred the classical method more in cases with recurrence, and it was not statistically significant. A drain was used in 65.3% of minimally invasive operations and 98.1% of classical operations ($p < 0.01$);

Table 4. Relationship of operation type with other variables

		Operation Type		p
		Classical	Minimally invasive	
Relapse	No	133 (61.3 %)	84 (38.7 %)	0.984
	Yes	22 (61.1 %)	14 (38.9 %)	
Drain use	No	51 (34.7 %)	96 (65.3 %)	<0.01 *
	Yes	104 (98.1 %)	2 (1.9 %)	

* p<0.05; Pearson Chi-square test was used.

DISCUSSION

PS is more common in younger men and overall annual incidence is 26 per 100,000 people⁹. In our study, 80% of the patients were male and median age was 25 years. Classical PS excisional techniques can be divided into three methods: secondary healing, non-midline closure, and midline closure. Reported recurrence rates are 4.5%, 1.4%, and 11%, respectively. Closure techniques are associated with faster recovery. Midline closure is associated with a higher rate of wound healing problems⁷. One meta-analysis has reported that excision followed by Limberg flap closure is the most common surgical intervention for PS³, the same study also reported low recurrence and complication rates after modified Limberg flap closure and non-midline closure and found no significant difference between the two. Recurrence (9.3%) in patients who underwent primary repair at a mean follow-up of 8 months; It has been reported that it is observed more frequently than in patients with flaps⁹. The cleft lift method, which is a Karydakis flap modification applied after excision, is associated with a low rate of recurrence (zero to 9%); however, the incidence of wound healing problems is high (18% to 40%)⁷. Another meta-analysis that examined 1573 patients reported that excision with non-midline closure was associated with lower rates of recurrence and hospitalization than excision with primary closure¹⁰. Classical methods were used in 61.3% of the PS surgeries in our hospital and most of these were excision with Limberg flap. Although it has been associated with higher recurrence rate, excision with primary suture closure, a midline closure

technique, was the second most common method used. It was observed that surgeons preferred classical methods more in cases with recurrence, but it was not statistically significant.

Minimally invasive PS techniques include pit picking, phenol, application of silver nitrate, laser ablation picking, and sinusectomy²⁻⁷. Although patient satisfaction and success rates are high and complication rates are low with minimally invasive approaches, they have been associated with higher rates of recurrence^{8,11}. The Bascom procedure is one of the oldest minimally invasive techniques and involves opening the roof of the sinus and debridement followed by secondary healing¹². Various modifications of this technique have been described¹³. The Bascom method differs from other excisional methods in that the inner sinus walls are not removed. It can be easily performed under local anesthesia and is considered a promising minimally invasive method¹⁴. Laser ablation is another promising minimally invasive method with a success rate of over 90%. With this method, after cleaning hair from the pit mouth and applying curettage, the tract is ablated using a 1470 nm-wavelength laser. Ablation can also be performed by debriding the tract under direct vision with a camera¹⁵. In a study that compared the Bascom procedure with laser ablation, success rate was higher with the former, while the latter was associated with faster recovery, better cosmetic outcome, and longer operative time¹⁵. In our study, minimally invasive treatment was used less (38.7%) than classical approaches. The Bascom procedure with marsupialization was the most common technique performed (35.18%) followed by laser ablation and the Bascom procedure alone.

In a survey of 594 general surgeons regarding PS treatment, the rate of preference for non-surgical treatments by surgeons with zero to 5 years of professional experience was 13%. The rate of preference for this method by those with 16-20 years of experience was 22%. Use of minimally invasive methods of PS treatment reportedly increases with professional experience¹⁶. In our study, most surgeons were aged 36-45 years. 69.4% of the surgeons who used minimally invasive approaches were also in this age group. As the surgeon age and experience increased, the use of minimally invasive techniques also increased. In addition, most surgeons who used a drain were aged 36-45 years. Drain use was significantly more common in classical procedures. As surgeon age and experience increased, drain use decreased. In the aforementioned survey, general anesthesia was the preferred anesthesia type as the surgeon's professional experience increased¹⁶. In another large survey conducted in Denmark, 41% of participants reported using local anesthesia for PS surgery and 58% of these departments, local analgesia is used in fewer than 10% of the cases¹⁷. In our study, spinal anesthesia was the most preferred anesthesia method and the rate of local anesthesia was quite low (7.1%). There was no significant correlation between surgeon age and type of anesthesia.

Our study has several limitations. It was retrospective in nature and did not include a control group. We believe that it will contribute to the literature, as it is one of the rare publications that examines the effects of surgeon age and experience in the pilonidal sinus.

CONCLUSION

Currently, no standard treatment has been established for patients with PS. Minimally invasive methods have been introduced and are being increasingly used. However, classical methods are still used more frequently in our clinic. Use of minimally invasive techniques increases as surgeon age and experience increases.

Conflict of interest

All authors declare that there is no conflict of interest.

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