

Evaluation of the risk factors of pilonidal sinus: A single center experience

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Background/aims: We aimed to evaluate which factors, if prevented, could facilitate a decrease in the rate of pilonidal sinus. **Materials and Methods:** From November 2008 to 2010, all patients referred to the surgery clinic were examined by the general surgery attending physician. Patients with a diagnosis of pilonidal sinus were considered as the trial group. The control group included healthy persons who accompanied the patients to the clinic. Both groups completed a questionnaire form, which included age, sex, occupation, weight, height, number of baths taken per week, mean duration of sitting and driving, and family history of pilonidal sinus. The Statistical Package for the Social Sciences software was used to analyze the data. **Results:** Positive family history was seen in 71.7% of patients compared to 23.2% of the control group. 70.7% of patients had body mass index >25, whereas only 12.9% of the control group were overweight. P value was significant for family history and body mass index >25. Long duration of sitting was seen in 66.7% of patients vs. 22.8% of the control group (p: 0.002). Long duration of driving was reported in 70.7% of the patient group compared to 24.8% of the control group (p: 0.001). Irregular hygiene of the sacrococcygeal region was noted in 74.7% of the patient group, while 40.6% of the control group took baths less than three times per week (p value was significant). Pilonidal sinus was seen in 39.4% of drivers in the patient group and in 23.8% of the control group (p: 0.012). P value was not significant between students in the patient and control groups (30.3% vs. 23.8%, respectively). **Conclusions:** Weight loss and regular hygiene, especially in patients with long durations of sitting and/or driving, are the suggested preventative measures to decrease the risk of disease.

Key words: Pilonidal sinus, drivers, students, overweight, prevention, recurrence

Pilonidal sinusün risk faktörlerinin incelenmesi: Tek merkez deneyimi

Amaç: Pilonidal sinüse neden olan ve önlenmesine yardımcı olacak faktörlerin tespit edilmesi amaçlanmıştır. **Gereç ve Yöntem:** Kasım 2008 ve 2010 tarihleri arasında genel cerrahi kliniğine başvuran tüm hastalar değerlendirmeye alındı. Pilonidal sinus tanısı olan hastalar çalışma grubu olarak ayrıldı. Kontrol grubu hastalara hastaneye gelişlerinde eşlik eden sağlıklı yakınlarından oluşturuldu. Her iki gruba cevaplamaları için: yaş, cinsiyet, meslek, vücut ağırlığı, boy, haftada kaç kez yıkanıldığı, ortalama günlük oturma ve araç kullanma süreleri, ailede pilonidal sinus hikayesi olması hakkında sorular içeren anketler verildi. Verinin analizi için SPSS kullanıldı. **Bulgular:** Hastaların %71.7'sinde ve kontrol grubunun %23.2'sinde pozitif aile hikayesi tespit edildi. Beden kitle indeksi >25 olanların sıklığı hasta grubunda %70.7 ve kontrol grubunda %23.3 bulundu. P değerleri aile hikayesi ve beden kitle indeksi karşılaştırmasında istatistiksel olarak anlamlı bulundu. Uzun süre oturma hasta grubunda %66.7 ve kontrol grubunda %22.8 sıklıkta tespit edildi (p=0.002). Hasta grubunda uzun süre araç kullanma %70.7 sıklıkla, kontrol grubunda %24.8 sıklıkla rapor edildi (p=0.001). Sakrokoksigeal bölgenin düzensiz yıkanması hasta grubunda %74.7 tespit edilirken kontrol grubunda haftada 3 veya daha az banyo yapma sıklığı %40.6 olarak tespit edildi (p değeri anlamlı). Hasta grubunda şoför sıklığı %39.4 kontrol grubunda %23.8 bulundu (p=0.012). Öğrenci sıklığı hasta ve kontrol grubunda benzer bulundu (Sırasıyla: %30.3 - %23.8). **Sonuç:** Zayıflamak ve düzenli yıkanma, uzun süre oturarak veya araç kullanılarak çalışanlarda pilonidal sinüs gelişmesini önlemek için önerilebilir.

Anahtar kelimeler: Pilonidal sinüs, şoför, öğrenci, kilolu, önlem, rekürens

INTRODUCTION

Pilonidal sinus (PS) is a common surgical disease, referring to a midline hair-containing sinus in the natal cleft (1). It is associated with a high recurrence rate, risk of infection and abscess formation (2). Previous studies have emphasized mostly the therapeutic method, which is associated with risk of recurrence (2). It is obvious that prevention is preferred to therapy because preventive strategies are more cost-effective and cost-beneficial than therapeutic strategies. Therefore, we decided to perform a study to determine the factors associated with increased risk of pilonidal disease, which if prevented, could facilitate a decrease in the rate of pilonidal disease.

MATERIALS AND METHODS

The local ethics committee of our institute approved our study, and all patients signed consent forms before the study. From November 2008 to 2010, we evaluated all patients who referred to the surgery clinic of Shahid Motahari Clinic, which is the largest referral clinic center in south Iran. All patients were examined by the general surgery attending physician. PS was diagnosed upon present existence or positive history of having a sinus in the perianal region with purulent discharge. Patients with diagnosis of PS were considered as the trial group. The control group included healthy persons accompanying the patients to the clinic. Both groups were requested to complete a questionnaire form which included age, sex, occupation, weight, height, numbers of baths taken per week, mean duration of sitting, family history of PS, and mean duration of driving. Long duration of sitting or driving was considered as an average duration of more than four hours. Regular hygiene of the sacrococcygeal region was defined as taking a bath three or more times per week. Body mass index (BMI) was calculated by the

standard formula of weight (kg) / height (m)². The data were entered in the Statistical Package for the Social Sciences (SPSS). To analyze data, chi-square test and binary logistic regression were used. Odds ratio was calculated, and a p value <0.05 was considered significant.

RESULTS

There were 200 subjects in the study, including 101 healthy volunteers in the control group and 99 patients in the trial group. The patients were aged between 13-30 years (mean: 25.1 years). When factors including positive family history, irregular hygiene, long duration of sitting or driving, and BMI >25 were compared between groups by chi-square test, these factors were statistically significant in the patient group (p<0.05). The factors were then compared between groups by binary logistic regression, and the results are summarized in Table 1.

Positive family history was seen in 71.7% of patients compared to 23.2% of the control group (p value was significant). 70.7% of patients had BMI >25, whereas 12.9% of the control group were overweight (p value was significant). Long duration of sitting (>4 hours) was seen in 66.7% in patients vs. 22.8% in the control group (p: 0.002). Long duration of driving was reported in 70.7% of the patient group compared to 24.8% of the control group (p: 0.001). Irregular hygiene of the sacrococcygeal region was noted in 74.7% of the patient group, while 40.6% of the control group bathed less than three times per week (p value was significant). PS was seen in 39.4% of drivers in the patient group and in 23.8% of the control group (p value: 0.012). P value was not significant between students in the patient and control groups (30.3% vs. 23.8%, respectively). Other occupations, such as soldiers, merchants, etc., constituted 30.3% of the patient group.

Table 1. The relation of risk factors and pilonidal disease

	Trial group n: 99	Control group n: 101	P value	OR	CI
Occupation Drivers	39 (39.4%)	24 (23.8%)	.012	4.482	1.388- 14.471
Students	30 (30.3%)	24 (23.8%)	.488	1.559	.444- 5.475
Positive family history	71 (71.7%)	23 (23.2%)	.000	13.621	4.391- 42.250
Irregular bathing	74 (74.7%)	41 (40.6%)	.000	10.906	3.486- 34.118
Long duration of sitting	66 (66.7%)	23 (22.8%)	.002	5.129	1.797- 14.638
Long duration of driving	70 (70.7%)	25 (24.8%)	.001	5.662	2.020- 15.871
BMI >25	70 (70.7%)	13 (12.9%)	.000	27.556	8.151-93.159

BMI: Body mass index. OR: Odds ratio. CI: Confidence interval.

DISCUSSION

Although many years have passed since pilonidal disease was first discovered, the etiology of PS has remained a problematic aspect of medicine (3). PS is a common surgical disease that mostly involves the young population. Kaymakcioglu et al. (4) reported that 70% of patients with PS were aged between 20-30 years. In our study, the mean age of patients was 25 years. The reason for this finding might be due to sex hormone secretion in young ages and therefore increased activity of the pilosebaceous glands. In our study, the male to female ratio was 3/1, as in previous studies (4), which means that the disease more frequently occurs in males.

Our study showed that the risk of disease in patients with regular hygiene of the sacrococcygeal region was less than in patients with irregular hygiene (Table 1). Recent studies reported comparable findings and showed that patients who bathed two times or less per week were at risk for PS (5). Increasing body hair rate was associated with a higher risk of developing PS in previous studies (6). This finding supports the hypothesis that injury to the skin by broken ends of the hair shaft is the main etiology of pilonidal disease (3-4,6-9).

The relation between occupation and PS has been reported differently in previous studies. In Turkey, Kaymakcioglu et al. (4) reported that most patients (24.4%) were office workers, followed by military drivers (15.4%). Harlak et al. (5) reported that pilonidal disease was not associated with any specific occupation; however, they did not deny a relation between occupation and pilonidal disease. In our study, drivers were the most common occu-

pation in the patient group, followed by university students. Among different types of occupations, PS was only significant in drivers. The reason for the different rate of disease in drivers might be due to the different types of cars and of road conditions in different countries; that is, driving modern comfortable cars on soft roads in developed countries might decrease the rate of disease when compared to our country (5).

Our study showed that patients with an average duration of sitting of more than four hours were at risk of developing disease. The reason is that a longer duration of sitting will cause trauma to the sacrococcygeal region. Previous retrospective studies confirmed this finding (5). These findings demonstrate why drivers and students are high-risk groups.

The authors believe that patients with high BMI are at high risk for pilonidal disease (1). In our study, overweight patients (BMI >25) were at greater risk of disease. The reason is that a deep and moist natal cleft in overweight or obese patients is more sensitive to injury by hair ends (10).

Pilonidal sinus was more prevalent in patients with a family history of pilonidal disease. Doll et al. (11) documented that patients with positive family history developed pilonidal disease earlier than other patients.

In conclusion, some risk factors such as positive family history and age are not modifiable. However, weight loss and regular hygiene especially in patients with long duration of sitting and/or driving are the suggested preventative measures to decrease the risk of disease.

REFERENCES

1. Arda IS, Guney LH, Sevmez S, Hicsonmez A. High body mass index as a possible risk factor for pilonidal sinus disease in adolescents. *World J Surg* 2005; 29: 469-71.
2. Conroy FJ, Kandamany N, Mahaffey PJ. Laser depilation and hygiene: preventing recurrent pilonidal sinus disease. *J Plast Reconstr Aesthet Surg* 2008; 61: 1069-72.
3. Doll D, Friederichs J, Dettmann H, et al. Time and rate of sinus formation in pilonidal sinus disease. *Int J Colorectal Dis* 2008; 23: 359-64.
4. Kaymakcioglu N, Yagci G, Simsek A, et al. Treatment of pilonidal sinus by phenol application and factors affecting the recurrence. *Tech Coloproctol* 2005; 9: 21-4.
5. Harlak A, Mentis O, Kilic S, et al. Sacrococcygeal pilonidal disease: analysis of previously proposed risk factors. *Clinics (Sao Paulo)* 2010; 65: 125-31.
6. Karydakos GE. New approach to the problem of pilonidal sinus. *Lancet* 1973; 2: 1414-5.
7. Kitchen PR. Pilonidal sinus: excision and primary closure with a lateralised wound - the Karydakos operation. *Aust N Z J Surg* 1982; 52: 302-5.
8. Armstrong JH, Barcia PJ. Pilonidal sinus disease. The conservative approach. *Arch Surg* 1994; 129: 914-7; discussion 7-9.
9. Hegge HG, Vos GA, Patka P, Hoitsma HF. Treatment of complicated or infected pilonidal sinus disease by local application of phenol. *Surgery* 1987; 102: 52-4.
10. Allen-Mersh TG. Pilonidal sinus: finding the right track for treatment. *Br J Surg* 1990; 77: 123-32.
11. Doll D, Matevossian E, Wietelmann K, et al. Family history of pilonidal sinus predisposes to earlier onset of disease and a 50% long-term recurrence rate. *Dis Colon Rectum* 2009; 52: 1610-5.