

To tuck or not to tuck: Can undershirt tucking habit affect the development of pilonidal sinus disease?

 Ersin Turan¹,  Suleyman Kargin²,  Osman Dogru³

¹Department of General Surgery, Beyhekim State Hospital, Sakarya, Turkey

²Department of General Surgery, Faculty of Medicine, KTO Karatay University, Konya, Turkey

³Department of General Surgery, Konya Education and Research Hospital, Konya, Turkey

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Abstract

Aim: Pilonidal sinus disease is a disease that is commonly seen in surgical practice. So far, many factors have been blamed in the development and etiology of pilonidal sinus disease. Our aim was to investigate whether a particular dressing habit, tucking of the undershirt into underwear, had a role in the development of pilonidal sinus disease.

Materials and Methods: Between January 2013 and May 2015, 923 patients with pilonidal sinus disease were admitted to our clinic. These patients and 685 other patients who presented to our clinic with other benign diseases (cholelithiasis etc.) were questioned about their dressing habits.

Results: In our study we questioned undershirt tucking habit; 444 (48%) of the patients with pilonidal sinus disease had a habit of tucking their undershirt into their underwear, while 479 (52%) did not. Whereas, in the control group, 384 (56%) had this habit, while 301 (44%) did not. Comparisons revealed a statistically significant difference between patients and controls in terms of undershirt tucking habits; those with pilonidal sinus disease were more likely to not tuck their undershirts into their underwear.

Conclusions: This is the first study to show that a simple, costless dressing precaution may be effective in the prevention of pilonidal sinus disease. Further studies with better-organized groups are required to confirm our findings.

Keywords: Acquired theory; pilonidal disease; tucking habit

INTRODUCTION

Pilonidal sinus disease (PSD) is a well-known and very common disease worldwide. Although it is a disease with well-established criteria and treatment strategies, there is no consensus on etiology and curative treatment.

In the nineteenth century, many physicians believed that PSD was a congenital disease caused by failure of dorsal midline fusion that led to entrapment of hair follicles in the sacrococcygeal tissue (1-3). However, recent research strongly supports an acquired basis of etiology (4). Bascom and Karydakos suggested that the penetration of free hair into the affected tissue triggered a foreign body reaction, which is one of the most widely accepted explanations for PSD development (5,6). In fact, the failures of surgical excision and/or frequent recurrences have made the acquired theory popular at the present time. Therefore, many acquired factors have been suspected to cause PSD development and numerous articles that have attempted to elucidate PSD etiology. Currently there is a long list of factors that have been associated with PSD,

such as obesity, prolonged sitting (e.g. truck drivers), body hygiene, hair type and follicle trauma, sacrococcygeal angle, smoking, weight gain, gluteal sulcus deepening, and excessive sweating (7,8,9). There are also factors that have been shown to be associated with reduced PSD likelihood, such as bathing at least 3 times a week (8,9). Even so, evidence on the role of each of these factors in PSD development is limited.

It is a popular opinion that the accumulation of hair shed from the back/gluteal region is an important trigger for PSD development due to tissue damage suffered by the weak skin on the midline. Therefore, preventing hair collection in this region may be effective in decreasing the likelihood of PSD development. Our hypothesis was based on the idea that dressing habits which counter hair accumulation in the sacrococcygeal region could decrease PSD frequency. Thus, our aim was to investigate whether undershirt tucking practices (tucking or not tucking into underwear) were associated with PSD development.

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Corresponding Author: Suleyman Kargin, Department of General Surgery, Faculty of Medicine, KTO Karatay University, Konya, Turkey

E-mail: drs.kargin@hotmail.com

MATERIALS and METHODS

This study was ensured that carried out accordance Declaration of Helsinki. Between January 2013 and May 2015, a total of 923 patients with PSD (patient group) who had applied to Konya Education and Research Hospital, General Surgery clinic and 685 patients with other benign diseases unassociated with PSD (control group) were enrolled in the current study. The patient group was comprised of patients who applied for PSD for the first time and did not have any chronic diseases that would affect skin structure and healing. The control group had diagnoses such as cholelithiasis, inguinal hernia, pancreatitis, etc. and were included consecutively if they did not meet exclusion criteria. Exclusion criteria for controls were having a history of PSD, diabetes mellitus, metabolic or endocrine disorders, applying to our department with complaints suggesting cancer, severe diseases requiring hospitalization or being followed for such diagnoses. Additionally, those that were on any chronic medication, had alcoholism or drug use, and patients that were referred to other departments with suspicion of diseases requiring specialist care were also excluded from both groups.

The demographic characteristics of all individuals were recorded. Sacrococcygeal region examination was performed to evaluate the presence of PSD. In this prospective study, demographic information and dressing habits regarding undershirt tucking (into underwear or not) were recorded in both groups.

Mean standard deviation (SD), minimum (min), maximum (max) and frequency (n,%) values were used in the descriptive statistics of data. The distribution of quantitative variables was assessed with the Kolmogorov-Smirnov test. Chi-square tests were used for the analysis of qualitative independent data, and the Fischer-exact test was used when chi-square test conditions were not met. The SPSS version 22.0 (IBM, Armonk, NY, USA) computer program was used for all analyses.

RESULTS

Among the patients with PSD, 777 (84.2%) were male and 146 (15.8%) were female. In the control group, 339 (49.3%) of the patients were male and 346 (50.7%) were female. The mean age of the patients with pilonidal sinus was 26.5 ± 7.61 (14-60) years, while the mean age of the patients in the control group was 49.27 ± 17.87 (17-87) years. The mean BMI of the patients were similar between two groups (PSD groups 27.14 ± 8.1 , control groups 26.74 ± 6.2 , $p=0.364$). The number of patients who BMI>30 was 132 (%14.4) in PSD groups, and 69 (%10.2) in control groups. While 71 out of 201 (%35.3) patients who obese were tucking their undershirt into underwear, 844 out of 1407 (%59.9) patients who non-obese were tucking their undershirt into underwear. Undershirt tucking habit was statistically lower in obese patients than non-obese patients ($p=0.001$).

In regard to undershirt tucking habit, 444 (48%) of the patients with PSD were while tucking their undershirt into underwear, while 479 (52%) were not. In the control group, 384 (56%) patients were tucking their undershirt into underwear, while 301 (44%) were not. The habit of tucking undershirt into underwear was significantly less frequent in those with PSD ($p=0.04$, Table 1).

Table 1. Distribution of the patients who undershirt into underwear or not according to groups

Groups	Undershirt into underwear		Not undershirt into underwear		Total N	p
	N	%	N	%		
PSD group	444	48	479	52	923	0.04
Control Group	384	56	301	44	685	
Total	828	51	780	49		

PSD: Pilonidal sinus disease, N: Number

When we evaluated only male patients, there were 777 male patients in the PSD group and 342 (44%) of these patients had the habit of tucking their undershirt into underwear, while 435 (56%) did not. Whereas, in the control group of 338 male patients, 203 (%60) had this habit and 135 (%40) did not. The difference between the two groups was statistically significant ($p<0.05$).

DISCUSSION

Although pilonidal sinus disease was historically regarded to be a congenital disease, evidence accrued through years of studies have made depicted the disease as an acquired condition. Many factors have been blamed in its etiology. Although the main factor in the pathogenesis of the disease is believed to be the increase in body hair, other predisposing factors, such as narrow and deep sulcus, extended sitting, obesity, smoking and lack of personal hygiene, have been suggested to have a role (10,11,12). In this study, we assessed the effect of undershirt wearing habits on PSD development, which has never been evaluated until now. Our findings show that tucking undershirts into underwear may be associated with lower PSD possibility; indicating that a very simple and costless lifestyle change may be utilized as a preventive measure.

Before starting this study, our primary point was to observe the effects of personal hygiene and body hair shedding on the development of PSD. Many studies have reported that good body hygiene reduces the risk of PSD (9). In a study conducted by Harlak et al., the probability of PSD was found to be 6.3 times higher in those bathing <3 times a week compared to those bathing ≥ 3 times a week (13). This finding is an important point which adds to the suggestion that hair accumulation in the intergluteal sulcus is a cause for PSD development. Therefore, seeing that patients had significant differences in dressing habits which possibly influence hygiene, we hypothesized that undershirt clothing habits may affect hair accumulation in

the intergluteal sulcus and undershirt tucking habits may be a predisposing factor in PSD formation. The results of this study show that PSD develops significantly less frequently in patients that tucked their undershirt into their underwear. The comparison of groups showed that 48% of patients with PSD had the habit of tucking their undershirt into underwear, while this rate was 56% in the control group without PSD. The fact that the majority of the patients in the control group were tucked their undershirt into their underwear and although the patients in this group were older supports our hypothesis. Due to the fact that PSD is more common in males, we compared the tucking habits of males separately. In this comparison, 44% of male PSD patients were found to tucked their undershirt into underwear, while 60% of controls had this habit.

It is believed that patients with high BMI are at high risk for pilonidal disease (14). The most obvious contributions from an increase in weight include a tendency to increased depth of the natal cleft, increased friction, and a tendency to softness and maceration at depth (15). We additionally determined that obese patients had not been tucking habit undershirts. Perhaps it may also contribute to not tucking habit their undershirts in the formation of PSD in obese patients.

When we assessed these findings, we came to a conclusion that, when the undershirt is outside of underwear, the only obstacle for hair accumulation in the gluteal region is the horizontally- narrow elastic region of underwear. Whereas, in persons who tuck their undershirt inside their underwear, this physical obstacle may be increased in horizontal width (due to the enclosing effect of underwear on the undershirt), which may increase the physical barrier-effect, also the increase in sheer fabric amount may contribute to the prevention of vertical passage of hair. Furthermore, this manner of undershirt tucking may also increase the amount of sweat absorbed, which would normally drain into the intergluteal area, leading to a reduction in adversities effecting the intergluteal area and midline skin.

CONCLUSION

Our results show that PSD likelihood is reduced in individuals that have a habit of tucking their undershirt into their underwear. As a result, we believe that this habit could be recommended to patients for the prevention of PSD development and/or recurrence. Although differences were statistically insignificant, there seem to be important differences between our groups in terms of age and sex distribution. However, comparisons among the males in each group also showed that undershirt tucking habits was remarkably different between groups. Secondly, although we employed a strict exclusion criteria based on medical history in order to be able to differentiate the effect of dressing habits, the fact that controls were comprised of patients with other complaints instead of a healthy population may have caused bias. Further studies with better-adjusted patient groups are required to confirm our findings.

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