

## The Effect of Body Mass Index on Relapse of Pilonidal Sinus Disease in Adult Patients

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| Article information                                                                                                                                                                                                                                                                                                                         | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <p>Article history:<br/>Received: 9 Aug 2010<br/>Accepted: 10 Apr 2011<br/>Available online: 27 July 2011</p> <p>Keywords:<br/>BMI<br/>Pilonidal Sinus<br/>Adult</p> <p>*Corresponding author at:<br/>Urmia University of Medical Sciences, Urmia, Iran.<br/>E-mail:<br/><a href="mailto:ar_mahoori@yahoo.com">ar_mahoori@yahoo.com</a></p> | <p><b>Background:</b> Pilonidal disease occurs either as a secreting sinus or in the form of an acute abscess in the coccygeal area and is an underlying cyst associated with granulomatous and fibrosis tissue which commonly contains heaps of hair, for which inherited and acquisitive hypotheses are proposed. Body mass index (BMI) is the objective indicator of obesity according to height and weight. This study aims to examine the relationship between BMI and the role of obesity in development and relapse of pilonidal cyst disease.</p> <p><b>Materials and Methods:</b> This retrospective cross-sectional study examined 126 patients with primary or recurrent pilonidal sinus within a year. A separate questionnaire was formed and recorded in the computer for each patient based on the disease type and body mass index.</p> <p><b>Results:</b> One hundred out of 126 studied patients (79.4%) underwent primary Pilonidal Sinus surgery and 26 patients (20.6) had recurrent Pilonidal sinus surgery. 36 patients (28.6) were female and 90 patients (71.4%) were male. Among patients with recurrent Pilonidal sinus, 18 patients (69.2%) had BMI above 30 and 8 patients (30.8%) had BMI of 25 to 30 kg/m<sup>2</sup>. The patients whose BMI was estimated to be 20 to 25 or less than 20 kg/m<sup>2</sup> per square meter, had no recurrence of disease.</p> <p><b>Conclusion:</b> In this study, high BMI was associated with relapse of pilonidal sinus disease. Supporting the previous studies, the incidence of disease in this study was also higher in young adults.</p> <p>Copyright © 2012 Zahedan University of Medical Sciences. All rights reserved.</p> |

### Introduction

Pilonidal disease occurs either as a secreting sinus or in the form of an acute abscess in the coccygeal area. In most cases, it is probably caused by infection, stimulation and hair getting stuck in deep tissues of sacrococcygeal area. Pilonidal disease is more common in men; especially young men who have more hair in their gluteal fold. Most often, this disease first appears in adolescence and when the hair growth and activity of sebaceous glands increases [1]. This lesion remains asymptomatic until it is acutely infectious, but the disease symptoms emerge when it relapses successively and is discharged from one or more sinus tracts. During the examination, one or more skin holes are seen on the midline or outer part on the sacral skin. Untreated pilonidal infection may lead to numerous secreting and sometimes long term sinuses and it rarely also cause malignant changes [2]. Acute abscess should be treated by incision and drainage which can be often performed using local anesthesia at the clinic or emergency room. A set of surgical treatments such as using different flaps, injecting drug into the sinuses and other procedures under local anesthesia, regional anesthesia or general anesthesia have been proposed for chronic disease with continuous secretions, sinus formation and recurrent pain. This is important to treat the

disease conservatively and only remove the affected tissue, and remain skin, fat and other healthy tissues intact [3-6]. Obesity may contribute to the development and recurrence of disease either directly or by increase of the impact of various risk factors. Body mass index or BMI is the objective indicator of obesity according to height and weight which is determined by dividing weight by square of height [7]. Various studies have investigated the effect of obesity and high BMI as well as demographic issues on primary and recurrent Pilonidal disease and different results have been reported [8-11]. Considering the above issues, in this study we intended to review the relationship between high BMI in Pilonidal disease in people who have been operated for the first time and also in patients with recurrent pilonidal disease who have been treated.

### Materials and Methods

This prospective cross-sectional research studied all patients of over 18 with pilonidal sinus, who were hospitalized in general surgery unit of Imam Khomeini Hospital of Urmia within a year during August 2008 to September 2009. After obtaining informed consent, the patients with primary pilonidal sinus who were hospitalized in the surgery unit for the first time as well as

the patients previously treated or operated for pilonidal disease, were selected. A separate questionnaire was formed, completed and recorded in computer for each patient based on the disease type and BMI. Patients' weight was measured using the same spring balance scale with accuracy of 100 g and their height was measured by tapeline and was recorded in the relevant questionnaire. Then BMI was calculated for each patient based on the respective formula. Finally, the data were entered the SPSS-16 software and BMI of the patients with primary pilonidal sinus disease and that of patients with relapsed pilonidal sinus disease were statistically compared by *t*-test. In addition, the  $\chi^2$  statistical test was used proportionate to the data and the values of  $p < 0.05$  was considered statistically significant.

## Results

The average age of patients with primary pilonidal sinus was  $22.12 \pm 7.5$  and the average age of patients with recurrent pilonidal sinus was  $26.53 \pm 3.5$ . The average age of patients with primary pilonidal sinus was significantly less than the average age of patients with recurrent pilonidal sinus ( $p = 0.0001$ ). 100 out of the total 126 patients (79.3%) underwent pilonidal sinus surgery, were operated for the first time and 26 patients (20.6%) were operated for recurrent pilonidal sinus surgery. Among these patients, 36 cases (28.6%) were female and 90 cases (71.4%) were male. 34 out of 36 female patients (27%) had primary pilonidal sinus disease and 2 patients (1.6%) had relapsed pilonidal sinus disease. 66 out of 90 male patients (52.4%) had primary pilonidal sinus disease and 24 patients (19%) had relapsed pilonidal sinus disease. According to the ( $p = 0.0001$ ), there was a significant difference between gender and pilonidal sinus (Table 1).

**Table 1.** Absolute and relative frequency distribution of patients with pilonidal sinus by gender

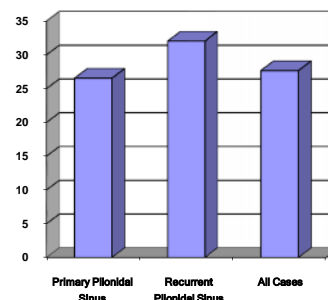
| Sex    | Recurrent pilonidal sinus (Number) | Primary pilonidal sinus (Number) | Total (Number) |
|--------|------------------------------------|----------------------------------|----------------|
| Female | 2(1.6%)                            | 34(27%)                          | 36(28.6%)      |
| Male   | 24(19%)                            | 66(52.4%)                        | 90(71.4%)      |
| Total  | 26(20.6%)                          | 100(79.4%)                       | 126(100%)      |

In addition, the average BMI of the studied patients was  $27.6 \pm 4.3$  kg/m<sup>2</sup>, which is higher than its normal value. The average BMI of the patients with primary pilonidal sinus was  $26.5 \pm 3.5$  kg/m<sup>2</sup> and the average BMI of the patients with recurrent pilonidal sinus was  $32.0 \pm 4.3$  kg/m<sup>2</sup> and considering that  $p = 0.0001$ , this finding is statistically significant (Fig.1).

According to BMI classification in this study, the following results were obtained (Table 2). Six out of 100 patients with primary pilonidal sinus had BMI of less than or equal to 20, 35 patients had BMI of 20 to 25, 50 patients had BMI of 25 to 30 and 9 patients had BMI greater than or equal to 30 kg/m<sup>2</sup>. Also, 12 (46.15%) out of 26 patients with recurrent pilonidal sinus had BMI of 25 to 30 and 14 patients (53.84%) had a BMI of greater

than or equal to 30 kg/m<sup>2</sup>. According to the results, there is a statistically significant relationship between relapse of pilonidal sinus and body mass index of the patient ( $p = 0.0001$ ).

**Figure 1.** The average BMI in the studied patients



**Table 2.** The relationship between primary and recurrent pilonidal sinus and BMI of the studied patients

| BMI     | Recurrent pilonidal sinus (Number) | Primary pilonidal sinus (Number) |
|---------|------------------------------------|----------------------------------|
| 20      | 0(0)                               | 6(8.4%)                          |
| 20-25   | 0(0)                               | 35(27%)                          |
| 25-30   | 12(46.1%)                          | 50(39.7%)                        |
| 30      | 14(53.8%)                          | 9(7.1%)                          |
| Overall | 26(20.6%)                          | 100(79.4%)                       |

## Discussion

126 patients who underwent pilonidal sinus surgery were investigated and the results indicated a relationship between body mass index and this disease. So that high BMI was significantly effective on the relapse of disease. Although in some studies, development of pilonidal sinus disease has been reported to be associated with obesity and high BMI levels, the findings suggest that at least in those with higher BMI, the recurrence rate is higher than other people. Obviously, cases such as long term inactivity, hairiness, anatomical issues and etc. are involved in causing disease. However, intensifying other risk factors, obesity causes a higher incidence of disease and the increase of its recurrence in patients already operated [11].

The average BMI of the patients who underwent primary pilonidal Sinus surgery was  $26.53 \pm 3.5$  kg/m<sup>2</sup> and the average BMI of patients who referred with recurrent pilonidal sinus and underwent surgery was  $32.02 \pm 4.38$  kg/m<sup>2</sup>. According to above results, it seems that obesity has a positive role in relapse of disease. The findings in this study are consistent with the study of Cubukcu et al in Turkey. In this study, the average BMI in patients who had relapse of disease 24 months after the surgery was 29.35 and BMI of patients who have no relapse of disease was 27.47 kg/m<sup>2</sup> and it was concluded that obese patients have higher risk of recurrence of disease after the surgery [10]. In our study, the age group was mostly 20-29 years old youth. Also in this study, 36 women and 90 men

referred to the hospital, which indicates the prevalence of this disease in young people and more common in males rather than females.

This study was consistent with another study conducted in this field in Turkey, which had reported that the BMI in young people is a significant risk factor and that pilonidal sinus disease is more common in males [11]. Given that pilonidal sinus disease occurs as a secreting sinus and an acute abscess in the coccygeal area gland, appears during puberty for the first time, and is known as inherited and acquisitive disease and the conducted studies indicate some risk factors for recurrence of disease including weight gain, it seems that weight gain is an important

factor in the incidence of primary pilonidal disease and during the surgery of primary pilonidal disease, if BMI is high the person will be more likely to have a relapse of disease. Obviously, various studies and obtained results demonstrate that relapse rates and infection of surgical area is higher in obese patients and smokers, and less weight is among the factors which can reduce the risk during the surgery [12,13].

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