

## Disease that should be remembered: Sacrococcygeal pilonidal sinus disease and short history

Burhan Hakan Kanat, Selim Sözen

Burhan Hakan Kanat, Department of General Surgery, Elazığ Training and Research Hospital, 23000 Elazığ, Turkey

Selim Sözen, Department of General Surgery, Medical Faculty, Namık Kemal University, 59000 Tekirdağ, Turkey

**Author contributions:** Kanat BH and Sözen S contributed equally to this work; Kanat BH and Sözen S designed the research; Kanat BH and Sözen S performed research; Kanat BH and Sözen S contributed new reagents or analytic tools; Kanat BH and Sözen S analyzed data; Kanat BH and Sözen S wrote the paper.

**Conflict-of-interest statement:** No conflict of interest was declared by the authors.

**Open-Access:** This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

**Correspondence to:** Burhan Hakan Kanat, MD, Department of General Surgery, Elazığ Training and Research Hospital, Rızaiye neighborhood, İnönü street, Number:74, 23000 Elazığ, Turkey. [burhankanat@hotmail.com](mailto:burhankanat@hotmail.com)  
Telephone: +90-424-2381000  
Fax: +90-424-2381000

Received: February 20, 2015

Peer-review started: February 22, 2015

First decision: April 10, 2015

Revised: May 8, 2015

Accepted: August 30, 2015

Article in press: August 31, 2015

Published online: October 16, 2015

### Abstract

Pilonidal sinus disease has led to heated debates

since it was first described in the medical literature. Although a consensus has been built on its etiology and pathogenesis, the same course has not progressed for treatment modality. This review is a short article about the process of pilonidal sinus disease from past to present. Some important points were mentioned between the years 1833, which is accepted as the milestone for the awareness of the disease, in which it was first reported until the year of 1880, in which it was given its name. Although its name has been the same for about two centuries, some other names such as "Jeep Disease" have also been used depending on the population affected by the disease. At present, it is indisputable that the disease is acquired. Large series were presented about the treatment in the last two decades. Some surgical methods were even named after the ones who first described them and they have many supporters. However, since the treatment modalities have some advantages and disadvantages and they do not have marked superiority over others, debates still continue. We hope that pilonidal sinus disease will not lose its significance and be underrated in parallel with the developments in technology and specialization in medicine.

**Key words:** Pilonidal sinus; History; Anorectal disease

© **The Author(s) 2015.** Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** Pilonidal sinus disease has been a debate for about 2 centuries, about which many articles and reviews have been written until now. In this paper, some points that can be accepted as milestones were chronologically presented from the date in which it was first described until today. Since the debates still continue and there is no consensus on the treatment, we suggest that the debates will continue. For this reason and since this article shortly and clearly explains pilonidal sinus disease milestones, we think that it will contribute to the surgeons dealing with the issue.

Kanat BH, Sözen S. Disease that should be remembered: Sacrococcygeal pilonidal sinus disease and short history. *World J Clin Cases* 2015; 3(10): 876-879 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v3/i10/876.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v3.i10.876>

## INTRODUCTION

Science, medicine in particular, cannot be evaluated without writing. Unwritten things are unreadable. Therefore, unread science and interventions cannot be learned and cannot be known. The basic rules of knowledge of medical experiences and interventions are written. It should be published for people to reach, after it is written; so the information can be transferred to the new generations.

## HISTORICAL OVERVIEW

Therefore, the beginning dates of many diseases as old as the history of humans is the date that they were written for the first time. This date is 1833 for pilonidal sinus disease. Herbert Mayo, British Physiologist, Anatomist and Surgeon (3<sup>rd</sup> April 1796-28<sup>th</sup> June 1852), described it as a sinus containing hair follicles located in the sacrococcygeal region in a woman, in 1833<sup>[1,2]</sup>.

Afterwards, an article named "Hair Extracted from an Ulcer" published by Anderson<sup>[3]</sup> in "Boston Medical Surgical Journal" in 1847 was found. He reported a case of a 21-year-old male with a Scrophuloderma on his back, in his article written as a letter to the editor. He reported that he drained the cavity after 3 wk and a structure looking like a mesh made of multiple hairs of 2 inches long and after complete drainage and cleaning of the hair in the cavity, the wound healed quickly<sup>[3,4]</sup>. Seven years later, in 1854 Warren reported 3 similar cases and this study is the first case series known in the history of pilonidal sinus disease<sup>[5]</sup>.

The disease was given many names until 1880. Widely used ones are; sacral, coccygeal or sacrococcygeal infundibulum, dermoid and dermoid fistula, congenital dermal sinus and sacrococcygeal ectodermal sinus<sup>[6]</sup>.

Eventually, in 1880, Hodges<sup>[7]</sup> named the disease with the statement of "I venture to give the name of pilo-nidal (pilus, a hair, nidus, a nest) sinus to this rather singular lesion." He produced the word "pilonidal" by conjoining the word "pilus" which means hair in Latin and "nidus" which means nest<sup>[8]</sup>.

## ETIOLOGY AND PATHOGENESIS

Discussions about pilonidal sinus disease are still hot even though it was described 200 years ago. In the previous years, there were many fevered arguments and many theories to describe whether the disease is congenital or acquired.

80 years ago, Gage<sup>[9]</sup> reported that pilonidal cyst and sinuses are congenital and he was supported. According to the congenital disease theory, it might have originated from caudal remnants of the neural tube, dermal inclusions produced by sequestered epithelial structures or dermal tractions that are produced during the involution of the tail during embryonic development<sup>[9-11]</sup>.

The disease was a commonly seen problem among soldiers in World War II, during which important explorations and developments were seen in medicine. It was detected to be particularly common among jeep drivers. It was emphasized that compression and irritation reaching the coccyx is important in the etiology and Buie<sup>[12]</sup> stated that the disease is acquired in his article named "The Jeep Disease".

In 1946, after the war, Patey and Scarff<sup>[13]</sup> demonstrated that it might be seen in other regions of the body. He wrote that a granulomatous reaction takes place following hair penetration of sub dermal tissue. In addition, he claimed that it is acquired, as it is also seen in the hands of barbers. Afterwards the idea of the disease being acquired became stronger with articles written by King<sup>[14,15]</sup> in 1947 and 1950.

Two important names that shook the last 20 years of modern surgery in pilonidal disease supported and explained acquired disease theory as the discussions go on. Bascom<sup>[16-19]</sup> says: "Only the bones get up when people stand up. Sacrum has to stick on to and pull up skin, fat and muscles to move the buttocks. This pulling process produces a vacuum effect all over the gluteal region. Hair enters the pit in case of a minor folliculitis as a result of the vacuum produced by the movement of the gluteal region".

Karydakis<sup>[20]</sup>, who published the largest pilonidal sinus case series in 1992, developed the most logical theory about the etiology and etiopathogenesis of the disease. He reported as a result of his 35 years of work on pilonidal sinus that the etiology is acquired. Especially minor local trauma is the most important predisposing factor of the disease. Hair penetration process is the basis of pilonidal sinus according to Karydakis<sup>[21]</sup>. Three main factors play a role in embedding of hair: Invaders formed by free hair (H-hair), the force that provides hair embedding the (F-force), and the vulnerability of the skin that lets the embedding of the hair deeper in the gluteal region (V-vulnerability). Pilonidal sinus disease develops in cases in which these three factors are present together and the disease development possibility could be calculated with HxFxV formula<sup>[20,21]</sup>. As a result, recently most of surgeons are in the opinion that the disease is acquired.

## TREATMENT

What about the treatment besides the discussions about the name and etiology? No consensus is obtained about the treatment even though tens of treatment options are written and discussed.

One might think who cares about the treatment of a pilonidal sinus as there are many life threatening diseases in the field of general surgery. However tens of surgical and non-surgical treatment options are described. Discussions continue as the treatment options have advantages and disadvantages, and no option is preferable to the other ones significantly. Different surgical procedure descriptions and modification of surgeons' different procedures, lead to increase the numbers of surgical techniques<sup>[22]</sup>.

The ideal treatment for pilonidal disease should be simple, with short hospitalization, less pain, local anesthesia if possible, low cost, the patient should go back to daily activities in a short time and recurrence rates should be low after treatment. Combination of all these measures is not possible for all treatment options. Therefore, treatment procedures must be planned according to the patient.

Conservation or a surgical method should be chosen when the treatment is planned according to the patient. Unnecessary surgical operations should be avoided for patients that could be treated conservatively and also time and workforce waste should be avoided for a patient that requires surgical treatment by trying a conservative treatment.

Many surgical techniques are present from simple surgical treatment methods such as incision, drainage, unroofing, curettage, and secondary healing, to the described and modified techniques such as excision flap, Karydakakis, Bascom, MacFee<sup>[16-23]</sup>. In addition, conservative methods such as phenol solution, crystalized phenol technique, cauterization, and alcohol injection have also been used<sup>[24-27]</sup>. No consensus was obtained as all authors advocate their own method. Treatment has to be planned according to the disease and the patient. Natural evaluation, recurrence reasons of the disease must be known very well and the state of the sacrococcygeal region should be evaluated carefully.

Pilonidal sinus caused interest in many aspects. Many materials such as the effect on quality of life and relationship with hormones were investigated and found place in the literature<sup>[25,28]</sup>. Besides all these processes there is consensus about the symptoms and clinical presentation of the disease. Patients present with 4 different forms as symptomatic, acute pilonidal abscess, chronic fistulizing form or complex pilonidal sinus disease. Chronic fistulizant form is the most common clinical presentation<sup>[26]</sup>.

Where and how does the pilonidal sinus disease stand in general surgery? General surgeons used to take care of orthopedic emergencies, plastic, cardiovascular and thoracic surgery in 1950s. However, increased number of specializations emerged with the development of technology. Today, especially after the millennium a big portion of general surgeons in academic field are interested in specific fields of general surgery. Pilonidal sinus became a part of colorectal surgery as many diseases are addressed to specific fields. For example surgeons and centres interested in

hepatobiliary surgery, peripheric vascular surgery or transplantation surgery are distant to the subject.

I hope, surgeons working outside of big centres with specialization in specific surgical fields and colorectal surgeons will continue to pay adequate attention and each of us will take his/her part.

In surgery, there is no such thing as major or minor. Therefore, pilonidal sinus disease should not be underestimated. Sometimes treatment might disappoint both the surgeon and the patient. At a point that you think everything is going very well, you are face to face with repeating surgeries, insecurity and dissatisfaction of the patient, and fear of surgical failure.

With the hope that pilonidal sinus is never underestimated nor forgotten...

## REFERENCES

- 1 **Mayo OH.** Observations on Injuries and Diseases of the Rectum. London: Burgess and Hill, 1833
- 2 **Khanna A, Rombeau JL.** Pilonidal disease. *Clin Colon Rectal Surg* 2011; **24**: 46-53 [PMID: 22379405 DOI: 10.1055/s-0031-1272823]
- 3 **Anderson AW.** Hair extracted from an ulcer. *Boston Med Surg J* 1847; **36**: 74-76 [DOI: 10.1056/NEJM184702240360402]
- 4 **Marvin L, editor.** Colon and Rectal Surgery. Corman, 2005: 616
- 5 **Warren JM.** Abscess containing hair on the nates. *Am Jour Med Sci* 1854; **28**: 113
- 6 **Kooistra HP.** Pilonidal sinuses Review of the literature and report of three hundred fifty cases. *Amer J Surg* 1942; **55**: 3-17
- 7 **Hodges RM.** Pilonidal sinus. *Boston Med Surg J* 1880; **103**: 485-486 [DOI: 10.1056/NEJM188011181032101]
- 8 **de Parades V, Bouchard D, Janier M, Berger A.** Pilonidal sinus disease. *J Visc Surg* 2013; **150**: 237-247 [PMID: 23911903 DOI: 10.1016/j.jvisurg.2013.05.006]
- 9 **Gage M.** Pilonidal sinuses: an explanation of its embryologic development. *Arch Surg* 1935; **31**: 175-189 [DOI: 10.1001/archsurg.1935.01180140003001]
- 10 **Gage M.** Pilonidal sinus: sacrococcygeal ectodermal cysts and sinuses. *Ann Surg* 1939; **109**: 291-303 [PMID: 17857325 DOI: 10.1097/0000658-193902000-00012]
- 11 **Stone HB.** The origin of Pilonidal Sinus. *Ann Surg* 1931; **94**: 311-315
- 12 **Buie LA.** Jeep disease. *South Med J* 1944; **37**: 103-109 [DOI: 10.1097/00007611-194402000-00012]
- 13 **Patey DH, Scarff RW.** Pathology of postanal pilonidal sinus; its bearing on treatment. *Lancet* 1946; **2**: 484-486 [PMID: 20998923 DOI: 10.1016/S0140-6736(46)91756-4]
- 14 **King ES.** The nature of the pilonidal sinus. *Aust N Z J Surg* 1947; **16**: 182-192 [PMID: 20295740 DOI: 10.1111/j.1445-2197.1947.tb03632.x]
- 15 **King ES.** The interdigital pilonidal sinus. *Aust N Z J Surg* 1949; **19**: 29-33 [PMID: 18138086 DOI: 10.1111/j.1445-2197.1949.tb03674.x]
- 16 **Bascom J.** Pilonidal disease: origin from follicles of hairs and results of follicle removal as treatment. *Surgery* 1980; **87**: 567-572 [PMID: 7368107]
- 17 **Bascom J, Bascom T.** Utility of the cleft lift procedure in refractory pilonidal disease. *Am J Surg* 2007; **193**: 606-609; discussion 609 [PMID: 17434365 DOI: 10.1016/j.amjsurg.2007.01.008]
- 18 **Bascom J.** Pilonidal disease: long-term results of follicle removal. *Dis Colon Rectum* 1983; **26**: 800-807 [PMID: 6641463 DOI: 10.1007/BF02554755]
- 19 **Bascom J.** The pathophysiology of pilonidal disease. The surgical treatment of pilonidal disease. Tezel E, editor. Nobel Tıp Kitapevleri Ankara, 2011
- 20 **Karydakakis GE.** New approach to the problem of pilonidal sinus. *Lancet* 1973; **2**: 1414-1415 [PMID: 4128725 DOI: 10.1016/s0140-

- 6736(73)92803-1]
- 21 **Karydakís GE.** Easy and successful treatment of pilonidal sinus after explanation of its causative process. *Aust N Z J Surg* 1992; **62**: 385-389 [PMID: 1575660 DOI: 10.1111/j.1445-2197.1992.tb07208.x]
  - 22 **Maurice BA,** Greenwood RK. A conservative treatment of pilonidal sinus. *Br J Surg* 1964; **51**: 510-512 [PMID: 14199061 DOI: 10.1002/bjs.1800510711]
  - 23 **Girgin M,** Kanat BH, Ayten R, Cetinkaya Z, Kanat Z, Bozdağ A, Turkoglu A, Ilhan YS. Minimally invasive treatment of pilonidal disease: crystallized phenol and laser depilation. *Int Surg* 2012; **97**: 288-292 [PMID: 23294066 DOI: 10.9738/CC130.1]
  - 24 **Girgin M,** Kanat BH. The results of a one-time crystallized phenol application for pilonidal sinus disease. *Indian J Surg* 2014; **76**: 17-20 [PMID: 24799778 DOI: 10.1007/s12262-012-0548-y]
  - 25 **Emir S,** Topuz O, Kanat BH, Bali I. Sinotomy technique versus surgical excision with primary closure technique in pilonidal sinus disease. *Bosn J Basic Med Sci* 2014; **14**: 263-267 [PMID: 25428682 DOI: 10.17305/bjbms.2014.4.139]
  - 26 **Kanat BH,** Bozan MB, Yazar FM, Yur M, Erol F, Özkan Z, Emir S, Urfalıođlu A. Comparison of early surgery (unroofing-curettage) and elective surgery (Karydakís flap technique) in pilonidal sinus abscess cases. *Ulus Travma Acil Cerrahi Derg* 2014; **20**: 366-370 [PMID: 25541849 DOI: 10.5505/tjtes.2014.62547]
  - 27 **Kayaalp C,** Olmez A, Aydın C, Piskin T, Kahraman L. Investigation of a one-time phenol application for pilonidal disease. *Med Princ Pract* 2010; **19**: 212-215 [PMID: 20357505 DOI: 10.1159/000285291]
  - 28 **Özkan Z,** Aksoy N, Emir S, Kanat BH, Gönen AN, Yazar FM, Çimen AR. Investigation of the relationship between serum hormones and pilonidal sinus disease: a cross-sectional study. *Colorectal Dis* 2014; **16**: 311-314 [PMID: 24330514 DOI: 10.1111/codi.12520]

**P- Reviewer:** Fourtounas C, Hortobagyi T, Tan XR  
**S- Editor:** Tian YL **L- Editor:** A **E- Editor:** Jiao XK





Published by **Baishideng Publishing Group Inc**

8226 Regency Drive, Pleasanton, CA 94588, USA

Telephone: +1-925-223-8242

Fax: +1-925-223-8243

E-mail: [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)

Help Desk: <http://www.wjgnet.com/esps/helpdesk.aspx>

<http://www.wjgnet.com>

