

An overview of surgical management of pilonidal sinus

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Abstract:

Pilonidal disease is a common and usually minor disease. Although wide excisional surgery has been common practice, there are more simple alternatives. This review focused on the etiology and management of pilonidal disease, concentrating on the surgical treatment of pilonidal sinus. PubMed, Embase, and Google scholar databases were searched up to November, 2017 for published studies with English language and human subjects discussing pilonidal sinus surgery in patients and surgical approaches. A pilonidal sinus is an anomalous situation, in which there could be found a nidus of epithelial and hair cells immersed in the cutaneous tissues of the intergluteal cleft. Pilonidal illness continues to provide many therapeutic challenges. Therapy must be adjusted to the extent and severity of disease. Proof sustains both open and closed surgical methods with no significant differences in difficulty rates. Open techniques with restricted sinus excision work for patients with limited illness. If closed methods are utilized, proof sustains placing the closure off the midline. Diligent, long-term postoperative follow-up and cautious focus on wound care are essential. Simple day-case surgical treatment to eradicate midline skin pits without wide excision of the abscesses and sinus is rational, safe and effective for patients with pilonidal sinus disease.

Introduction:

Pilonidal disease, first described in the 19th century [1], is common [2], especially in the military [3]. It is a small condition for most of patients but could trigger pain and sepsis leading to time off job and school.

Over the past 70 years some surgeons have prevented wide en bloc excision [4], because of the danger of debilitating complications, whereas various other surgeons still utilize these techniques [5]. Surgical therapy of pilonidal disease should now infrequently need hospital admission. Nevertheless, 7000 patients were admitted for a mean stay of 5 days (35 000 bed days) to hospitals in England in 1985, and 11 534 patients were admitted in England and Wales in 2001 with a mean hospital stay of 4 - 3 days (49 596 bed days) [6]. In the 1980s 40 000 patients with pilonidal disease in the USA invested 208 000 days in medical facility and it was estimated that preventing a hospital stay can conserve US \$40 million per year. The moment spent in health center was a dominating factor in the development of therapy for this illness and it remains to have substantial financial consequences.

Throughout World War II (1939- 1945), when it was extremely essential to have combat-ready men, practically 78 000 soldiers, the equivalent of five army departments, were admitted to US Army hospitals for pilonidal illness and remained in hospital for a mean of 55 days. Hospital remain for pilonidal illness in the US Navy in 1940 amounted to that for rupture and syphilis, and 2075 USA marine patients were hospitalized for 392 days in 1965- 1966 [7]. Over a 2-year period in the 1990s in one Army Centre in the USA, 240 excisional operations were performed in a group of 229 patients, that needed 4760 occupied-bed days, a mean of 21 days per patient. These

long hospital stays were partially discussed by soldiers being discharged only when they were suited for duty [8]. The results of surgical treatment were so poor that some US army surgeons prohibited all surgical treatment for this condition, initially throughout World War II, then again in 1967 [8].

Of 4670 Greek Army candidates operated for pilonidal disease almost half (2288) had recurrent illness. Bad failures after surgery could cause a long period of time off school or work, in-hospital remains of as much as a year, wounds being loaded for 15 months, unhealed wounds for as much as 37 years, several (as much as 13) procedures, split-skin grafts, and cosmetic surgery using muscle flaps or even radiotherapy. Although treatments could have improved for some patients the difficulties of surgical procedure stay worse compared to the primary disease [9].

Pilonidal disease is a common and usually minor disease. Although wide excisional surgery has been common practice, there are more simple alternatives. This review focused on the aetiology and management of pilonidal disease, concentrating on the surgical treatment of pilonidal sinus.

Methodology:

PubMed, Embase, and Google scholar databases were searched up to November, 2017 for published studies with English language and human subjects discussing pilonidal sinus surgery in patients and surgical approaches. Moreover, we included reviews and randomized

control studies, we excluded all case reports, in our search strategy we scanned the references list of our included studies for more relevant articles.

Discussion:

- **Aetiology of pilonidal sinus disease**

The very first patient reported as having pilonidal disease in 1833 was cured by simple opening of the system without its excision [1]. In 1847 it was referred to as being caused by hair [10]. The recommendation that the illness had an embryological origin⁴ led to broad excisional surgery and the idea that reappearance is due to insufficient excision. However, it is currently recognized that pilonidal illness is an acquired, self-limiting problem that establishes around puberty [11]. Threat factors for pilonidal disease consist of age between 18 and 30 years [12], it is rarely seen in more youthful or older patients [14], male sex [12], hairiness weight problems and a deep natal slit and bad hygiene (it has been called 'Jeep seat' or army illness) [15]. Although typical in Mediterranean countries, it is uncommon in East Asia, Oceania and sub-Saharan Africa. In 1947 King [11] recommended that acquired midline skin pits were the primary aetiological consider pilonidal illness and that these developed from hair follicles or skin crypts. This was based on a detailed pathological research study of the advancement of the illness from its earliest phases as enlarged hair follicles or skin crypts, with to primary and secondary sinuses and abscesses. Bascom [16] repeated the pathological study and verified these searchings for in 1980. The universal presence of midline skin pits in all patients with pilonidal illness has been highlighted by Millar, Lord and Bascom [16]. Enhancement of the hair follicles [16] or skin crypts may be due to the tethering and

Careful extending of the skin in the midline [16], inflammation of the skin in the cleft, and blockage of hair roots similar to the modifications observed in acne. Karydakis and Bascom have observed that, following 'advancing flap' procedures, the skin in the deepness of a 'new natal cleft', however not in other places, could develop the features of a vulnerable raphe with expanded pores of hair follicles and maceration of the skin, raising the threat of developing recurrent illness. The instructions of the skin pit and sinus tracks is constantly the same as the instructions of hair growth in hair follicles bordering the pits. It has been suggested that the growth of an acne kind of folliculitis in the bigger hair follicle could be a crucial very first event in the advancement of an abscess, which is perpetuated by the access of skin debris and loosened hairs into the skin pits. This is helped with by the motion of the butts and the barbed nature of the hairs, which could pass right through to be extruded from a secondary opening. Tips of hairs could likewise dip into the midline skin pit while still attached to their roots. On the basis of comprehensive research studies, Karydakis ended that 'hair insertion' (infiltration of the skin by hairs) is the most vital consider the development of the illness. Brearley recommended that the hairs pierce intact skin and drill through the subcutaneous tissue to trigger the skin pits and abscesses, as might happen in barbers' interdigital pilonidal sinuses. Nevertheless, as approximately 50 per cent of patients with natal cleft pilonidal illness may not have hairs in the sinus or abscess [17] and the hair in those that do might not originate from the patient [18] it is most likely that hairs are essential secondary factors instead of the primary reason for the disease [19].

- **Unhealed midline wounds after surgical treatment**

Although unhealed midline wounds might be uncommon, they are the bete noire of pilonidal surgical procedure. These, together with recurring condition, numbers of postoperative wound

difficulties and time to complete recovery of open or dehisced sutured wounds, are the factors that should be determined to contrast various techniques of therapy. Few research studies have videotaped all these parameters [20], specifically the frequency of unhealed midline wounds and the number of operations needed to attain full healing. Precise dimension of these parameters needs lengthy follow-up of big teams of patients. In small research studies with brief follow-up, there is a risk of under-reporting one of the most considerable and debilitating complications of pilonidal condition surgical procedure [9]. It is difficult to draw firm final thoughts from comparisons in between various methods of medical therapy without this details, which is frequently absent even within randomized trials [20], [21].

- **Current methods of treating pilonidal disease**

The nature of the presentation of pilonidal disease and its severity should determine the way it is managed [22].

Non-surgical treatment

It is reasonable in patients with inactive asymptomatic pits or nodules to recommend a watch-and-wait policy. Nonsurgical therapy for energetic illness by mindful perianal health and shaving was introduced in 1947 due to the prolonged impairment to solution workers throughout the war from surgical therapy. Three other studies [23] have confirmed reduced subsequent surgery rates in over 170 patients treated conservatively. Elimination of hairs is a vital part of all treatments and various depilation methods have been utilized over the years [23]. Injections with sclerosants have been used because the initial descriptions of pilonidal illness [2]. Phenol shots attain treatment rates of over 70 percent without surgical treatment and excision of the abscess.

Simple surgical procedures without wide excision of abscesses

In one research study, over half of the 73 patients who offered for the first time with an acute abscess recovered entirely after basic drain [24]. A number of these patients (42 of the 73) had no more issues over the following 5 years. This and an additional research [25] show that many patients offering with an acute abscess can be treated without excising the abscess or skin pit. In 1935 non-excisional surgical procedure was made use of to treat 618 patients with chronic disease by basic laying open of the abscess and sinus, and marsupialization of the wound. Utilizing the exact same method [26], consisting of a recent big research study, comparable outcomes were accomplished with a reoccurrence rate of 1-- 6 per cent in 441 patients followed up for 1- 10 years. Utilizing the very same technique without marsupialization, a more 815 patients had comparable outcomes and a 5 percent recurrence rate. In the 1960s Lord and Miller streamlined non-excisional surgery by cleaning up the sinuses with a nylon bristled brush without laying them open, and for the first time officially excised the skin pits through tiny midline lacerations. Bascom [16] highlighted the importance of excising the skin pits yet cleaned the abscesses with a side incision far from the midline. The volume of tissue removed with each pit ought to be no more than a grain of rice. The general aim of this procedure is merely to 'choose the pits' via tiny midline cuts and 'stay out of the ditch [27] the natal slit. In a recent research of 1435 patients the midline pits and secondary openings were simply cored out utilizing skin trephines and the abscesses were cleaned out with the trephines, which were left unsutured. There was a 16 - 2 per cent reoccurrence rate with a mean follow-up of 6 - 9 years [28] The reasonably high recurrence rates after simple excision of skin pits [28] is tempered by the ease and success of a repeat treatment; this means that, although one procedure might heal less than 85 per cent of patients, a 2nd finally remedies over 95 percent of all patients. Open up wounds are the various other negative aspect of these treatments. Nevertheless, as 50 per cent of the lateral wounds after a Bascom procedure were entirely healed at 3 weeks, 99 percent by 3 months and all by 4

months, and patients can be self-caring in the community, the open lateral wound does not greatly delay go back to function, which might be the day after surgical procedure [28]; nonetheless, this is not constantly attained.

Wide excision of the abscess with or without midline skin closure

‘... wide block resection and primary closure for pilonidal sinus disease ... was based on the concept that this disease has a congenital origin. Most surgeons have long since discarded the theory of a congenital origin ... yet cling to the surgical procedure that was based on the erroneous theory ...’

Julian Rickles (1974)

Despite broad excision of the abscess being banned and deserted by some surgeons, it is still utilized by others [29], perhaps due to the fact that, by thorough focus on medical strategy and great postoperative hygiene, bad results are less constant. However this is not globally attained and some centres continuously see the debilitating complications from this type of surgery, including unhealed midline injuries [30]. There is no solid evidence that large excision of the abscess is the only cause of unhealed midline wounds and there is little details on the regularity with which they happen, although it may be as high as 2-7 percent. Nevertheless, as unhealed injuries primarily happen in the midline and as pilonidal illness is triggered by the environment created by the natal cleft, it is most likely that there will certainly be a greater threat of this issue and frequent condition if lengthy midline wounds, sutured or unsutured, are created, as happens after lots of wide excisional procedures. Systematic evaluations verify the conclusions of many previous non-randomized research studies of broad excisional methods that, although time to finish recovery could be quicker after midline closure, reoccurrence rates can be as high as percent compared with around 6 per cent with the easy lay-open non-excisional treatments [31].

Off-midline skin closure with and without wide excision of the abscess

Two methodical reviews [20], [21], which included an evaluation of 6 randomized regulated tests (RCTs) [21], wrapped up that off-midline (instead of midline) skin closure should end up being basic management after wide excision of the abscess. The Karydakis off-midline flap procedure was established 'to put brand-new immune skin to the deepness of the intergluteal layer to avoid hair insertion, and as a result reoccurring condition [32]. This is attained by an elliptical asymmetrical wide excision of skin, abscess and sinus, mobilizing the skin edge closest to the midline to create a thick flap, which is then sutured to the side furthest away from the midline. The deep surface area of the flap is stunned to the underlying sacrococcygeal fascia [32]. Karydakis records that other surgical strategies produce a wound at the depth, which ends up being an open site of entrance situated at the target point of hair insertion [32]. In a study by Karydakis from 1966 to 1990 on 7471 patients, 95 percent of whom were subsequented for 2-20 years, the mean time in medical facility varied from 1 to 3 days. The majority healed quickly with a mean time off work of 9 days and 75 (1 - 0 per cent) created recurrence. Kitchen's and Bascom's alterations of the Karydakis strategy use thinner skin flaps and the Bascom 'cleft lift' procedure avoids any kind of excision of the abscess or secondary openings. If the abscess wall surface is rigid, it is 'cubed' to enable it to collapse. Additional openings of the abscess well away from the midline do not need to be consisted of in the excision wound. They will certainly heal following eradication of the primary midline skin pits if their openings are slightly enlarged for drainage and the tracks resulting in them are cleaned of hairs and debris. Whereas the Karydakis procedure incidentally squashes the natal slit, among the major objectives of the Bascom adjustment is partly to close or squash it to make sure that skin closure is closer to the surface area in addition to off the midline. Although Karydakis procedures [33] were at first carried out under basic

anaesthesia, the customized strategies are significantly being done under local anaesthesia as a day case. The variety of publications on the Karydakis procedure- 105 in the past 5 years shows its raising appeal and most report in a similar way good outcomes (Table 2), in addition to one RCT105 that has revealed a higher injury infection rate then treatment compared with a Limberg flap (26 versus 8 per cent). Although 4- 26 percent of patients have wound complications, consisting of skin necrosis, infections, seromas, haematomas and wound dehiscence, a lot of these can be handled on an outpatient basis. Total wound healing takes place within 1 week in 60- 70 per cent of patients, many need marginal care in the neighborhood and return to operate in 1- 4 weeks, and the debilitating issues of surgical treatment for pilonidal condition have not been reported then strategy. A randomized test of Bascom's two operations in patients with primary condition revealed better outcomes with the cleft lift procedure compared to with the less complex pit-picking operation [34]. The slit lift treatment may be the very best procedure for extra considerable disease in hairy patients with deep natal clefts.

More complex skin flap procedures after wide excisional surgery

Although great outcomes have been attained after Z/V-Yplasties and rhomboid/Limberg flaps [35] 2 RCTs recommend that V-Y and Limberg flap treatments are not superior to a simple primary closure technique¹¹⁹ or laying open with marsupialization. These a lot more complicated flap treatments include excision of the abscess, call for general anaesthesia and a much longer health center remain, and have occasional difficulties that require further inpatient surgical procedure. Overall, they offer little or no additional benefit to the changed Karydakis procedures and may be cosmetically disfiguring [36].

Conclusion:

A pilonidal sinus is an anomalous situation, in which there could be found a nidus of epithelial and hair cells immersed in the cutaneous tissues of the intergluteal cleft. Pilonidal illness continues to provide many therapeutic challenges. Therapy must be adjusted to the extent and severity of disease. Proof sustains both open and closed surgical methods with no significant differences in difficulty rates. Open techniques with restricted sinus excision work for patients with limited illness. If closed methods are utilized, proof sustains placing the closure off the midline. Diligent, long-term postoperative follow-up and cautious focus on wound care are essential. Simple day-case surgical treatment to eradicate midline skin pits without wide excision of the abscesses and sinus is rational, safe and effective for patients with pilonidal sinus disease.

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