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# SCALPELLESS MINIMAL INVASIVE TECHNIQUE, 'LEAST IS BEST IN ALL WEATHERS' FOR SACRAL PILONIDAL SINUS, PART TWO – VERBUM SAT SAPIENTI EST. I.E., A WORD TO THE WISE IS SUFFICIENT

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## ABSTRACT

**Background:** Complication/recurrence free scalpelless ambulatory technique suitable in all types of *sacral pilonidal sinus disease* (SPSD). Random online search for relevant articles under pilonidal disease treatment, surgical anatomy with articles received from various colleagues and reference lists. **The Hypothesis:** *Chronic SPSD* (CSPSD) is two layered structure, *deeper friendly fibrous connective tissue* and *unfriendly superficial endo/epithelial or granular tissue layer*; while *acute SPSD* (ASPSD) consists of inflamed edematous wall of cavity with intracavitary necrotic detritus. THE **Operative Technique:** Ambulatory technique of *'curettage'* of *unfriendly superficial endo/epithelial or granulation tissue* with detritus *'only'* leaving *friendly deeper fibrous tissue layer intact* is advocated in CSPSD. ASPSD has detritus with inflamed wall of cavity treated by off midline tiny incision unless an opening is there with drainage and curetting. It can either heal fully or form CSPSD. *Acute-on-chronic SPSD* (A/CSPSD) is first dealt as ASPSD followed as CSPSD. Recurrent SPSD and/or postoperative wound complication can be either CSPSD or ASPSD dealt accordingly. **An Exemplary Case:** 50 year's lady had total hysterectomy with bilateral salpingo- ovariectomy on 05/12/2000, developed wound problems and lower abdomen became sieve of sinuses despite several surgical attempts. This was curetted without anesthesia/analgesia in few ambulatory sessions with relief and recurrence free for over two decades. **Discussion/Conclusion:** SPSD is treated by multiple modalities without satisfaction that led surgeons search for conservative techniques, yet complications or recurrences are persisting. Simple curetting is ambulatory technique for all cases; repeated until full healing and easily reproducible; hence '*least is best in all weathers*'.

**KEYWORDS:** Sacral pilonidal disease, scalpelless surgery, sinus curettage, epilation, Curcumin, Aloe vera.

## INTRODUCTION

It is an innovative technique alongwith methodical analysis of a principle on which the hypothesis is based. *Sacral pilonidal sinus disease* (SPSD) is an obstinate contentious clinical entity starting from nomenclature[1] to etiology to taxonomy[2,3] to histopathology[4] to various treatment protocols to postoperative management to wound healing (WH) complications and/or recurrences and follow-up regimes[5] besides certain notional controversies such as sacrococcygeal or sacral[6] or coccygeal to abscess cavity or cyst to sinus or fistula. In this vexing scenario it is attempted to advance an easy access ambulatory *scalpelless minimal invasive technique, 'least is best in All Weathers'* without anesthesia/analgesia, yet literally painless procedure suitable in all stages, i.e. ASPSD, A/CSPSD, CSPSD and complicated and/or recurrent (RSPSD) ones – hence *'least is best in all weathers'*. Many classifications[2,3] of SPSD has been devised but none are satisfactory. Wysocki et al[3] stated, "Many surgeons consider sPSD (sacrococcygeal pilonidal sinus disease) to be differentiated into multiple different forms (patterns of presentation). An alternate hypothesis is that sPSD is the one disease which presents in different forms. The former would be classified and the latter, staged." This Author follows later hypothesis and counsels clinical staging for treating SPSD. Sacral dimple is different from pilonidal disease. Flannery and Kidd[7] stated skin dimple to be present in 15% of newly born infants but may persist into adult life in about 3% people.

Franckowiak and Jackman[8] found postanal dimples in 30% of children and 4% adults and counseled parents to leave it alone. Incidentally discovered needs careful follow-up and counselling to come back if there are symptoms. A random online search made for relevant articles from various sources besides articles received through colleagues and reference lists about various treatment methods practiced in SPSD besides postoperative complications/ recurrences and *psychosomatic and quality of life* (PQOL). An exemplary case finding highly relevant to the context is also appended.

**THE HYPOTHESIS**

CSPSD is two layered structure, i.e. *deeper friendly fibrous connective tissue* forms final hallmark of healing, which is not disturbed/destroyed and *unfriendly superficial endo/epithelial or granular tissue layer* prevents healing which must be curetted and cored out. ASPSD consists of inflamed edematous cavity wall with necrotic detritus devoid of layers need cavity toileting of detritus. A/CSPSD is first dealt as ASPSD followed as CSPSD. RSPSD and/or postoperative complication can be either CSPSD or ASPSD dealt accordingly.

**THE OPERATIVE TECHNIQUE IN SPSD**

In prone jack-knife position, usually there is no need for anesthetic/analgesic as entire procedure is practically painless because offending layer in sinus tract is devoid of nerve endings. However in worst case, lidocaine spray over opening and even injecting few ml of 2% lidocaine inside cavity may suffice. Shaving of natal cleft around pit or sinus opening for 1 to 2 centimeters may suffice if there is hirsutism. Retracting nates manually avoids uncomfortable strapping and its removal painfully pulls on cut hair ends in conscious state. Povidone-iodine cleaning of skin is done around sinus opening that may be dilated by suitable dilators if needed. In *CSPSD*, sinus tract is defined by probing its course and extent. *Superficial endo/epithelial, granulation* and lumen contents are *unfriendly tissues* in *chronic sinuses and cavities* needing ablating them *only* by gently curetting in least invasive manner through sinus mouth/s, while conserving *'deeper friendly fibrous connective tissue layer'* to save repetition of natural healing biomechanism and prolong recovery unduly – *rationale*. Sharp Sims curette is passed down the tract and unfriendly tissue layer is curetted including slough, hairs, pus, debris by up-down and rotary actions. This is carried out few times in various directions till soft granulation tissue and endo/epithelium is firmly curetted out. Deeper tough fibrous tissue layer feels woody hard and curette just slides over it. At this point carefully avoid undue pressure lest the fibrous plate is damaged leading to serious complications like bleeding and pain. Goal is achieved as Bascom and Bascom[9] observed, "The wall of the pilonidal abscess cavity is often left in place, since it is normal fibrous tissue and will heal." Important point is *not* that it is '*normal fibrous tissue*' and *will heal*, but healing shall take place by *"fibrous tissue replacing normal tissue irrespectively"* and its in-vivo conservation is judicious. *Curetting only* is right step leading to *paradigm shift* in SPSD. In *ASPSD*, acutely inflamed cavity with purulent exudate, small puncture is made paramedially unless a hole is there and curette is used to clean the cavity gently of slough, hairs, pus or debris as there has not been enough time to form tissues of chronicity, i.e. epithelium/granulations and fibrosis. Such cavities may bleed more due to excess hyperemia from acute inflammation, easily controlled by manual pressure and dressed with onlay povidone-iodine *ointment sanitary dressing* to save gauge sticking on pit. *Postoperatively* onlay povidone-iodine ointment sanitary dressing changed once or twice daily and ensures sinus patency for free drainage. It heals in week or ten days and follow-up visits organised weekly or fortnightly, as few cases may need further treatment depending on severity and number of sinuses. Healing is denoted by stoppage of leak from sinus. Repeat curetting need in ASPSD is less than CSPSD. Too many dressings exclude air, hold infective discharges around surgical wound and create an ideal warm, moist place where pathogens grow. Thus patient is advised to *gently* clean pit areas as often needed and massage depth of natal cleft from down-upwards several times to evacuate any collections, reduce edema and help cohesion between adjacent fibrous plates of tract. They must avoid sitting on rough or extra cushioned seats for long time in *sacroischial pose* continuously to eliminate trauma and pressure to avoid ischemia in lower sacral area. Patient is encouraged to start job as soon as they can because exercise helps in healing and reduce pain too. Shaving natal hairs is discouraged as local terminal hairs are *likely not* involved (Doll et al[10]) but natal hygiene is fully explained. No prescription is needed and most cases would stop efflux from sinus by the time and next follow-up visit is arranged after fortnight. Future visits are made between surgeon and patient as SPSD recurrences can occur even after decades.[5]

**AN EXEMPLARY CASE FINDING**

50 year's lady in Mumbai, India had total hysterectomy and bilateral salpingo-ovariectomy on 05/12/2000 with eventful postoperative copious seropurulent discharge from scar on 14/01/2001 and next day widened the opening packing with gauge. *Wound discharge was sterile* and on 31/01/2001scar was fully opened packing with gauge for alternate day dressings. Secondary sutures done on 09/02/2001 with open drain removed on 15/02/2001 and sutures removed on 19/02/2001. She travelled abroad next day wherein her left side of scar started leaking again. She returned to Mumbai on 14/06/2001 and on 16/06/2001, a dermatological opinion was sought to exclude actinomycosis that was negative. This Author was called on 17/06/2001 who found her nutritionally depleted with over ten leaking sinuses on and both sides of hypogastric transverse surgical scar possibly from openings of tension sutures applied during secondary sutures (operation notes were lost) with badly puckered, toadlike nodular variegated skin all over lower

abdomen. Blind curetting of sinuses leading to subcutaneous cavity along full length of about 25 centimeters scar, was carried out without anesthesia and analgesia by sharp Sims curette over half an hour in operation theatre for all. She would walk out without any aid and never needed analgesics or antibiotics. Curettings were carried out week to ten days' interval between 21/06/2001 to 21/08/2001 until all sinuses closed. Sadly, she developed painful swellings in left inguinal region from 06/09/2001; excision biopsy of left inguinal lymphadenopathy done with curetting of sinus track deep into retropubic space on 23/09/2001 under general anesthesia after investigations and histology confirmed tuberculosis. Antituberculous therapy was started on 23/10/2001 continuing for a year with full recovery. Now after two decades, her lower abdomen skin is normal looking, even the sinuses are imperceptible and she is in good PQOL free of recurrence. It is remarkable that copious wound discharge was sterile *indicating that infection was not the cause for poor WH* though initial *superficial skin swab culture* did show growth that was ignored. This may prove paradigm shift in WH management generally and SPSD specifically.

**DISCUSSION**

SPSD looks deceptively simple, yet is most ill understood ill treated disorder refractory to current treatment modalities. It inflicts huge morbidity and economic burden from prevailing treatments involving invasive mutilating surgeries sans lasting result (Stauffer et al[5]). This led to various improvisations of different techniques to achieve lasting complication free satisfactory cure either by existing surgical techniques or by improvisation of newer ones, i.e. since 2008 on from *'less is more'* to *'minimal invasive procedures'* to now *'least is best in all weathers'*, discussed succeedingly. Doll et al[11] advocate, "Methylene blue is the only coantibiotic proven to reduce 20-year recurrence rate, and it should be used in every pilonidal sinus procedure", but hasten to add, "It does not improve wound healing rate though." They[11] continue, "Seventy percent of all recurrences arising were within 5 years after surgery; thus, our actuarial 5-year recurrence rate was 14%, with 11% in MB group and 29% in the non-MB group." They[11] raise uncertainty too, "If incompletely excised tracts are the cause – or one of the causative factors – of recurrent disease ...?" MB advised by them[11], is contested by Idiz et al[12] (2014) and Kooistra[1] (1942). Idiz et al[12] felt, "However, when applied through the outer mouth of the sinus, MB may be inadequately distributed because of the presence of hair or other foreign bodies, acute inflammation, etc." Its demerit is that it is less helpful due to staining normal tissues also by spillage during dissection and misleads to locate tract thereby excise unnecessary tissue while hide the tracts and result in unduly large wound with its dreadful consequences. Further if tracts are occluded by debris or fibrosis shall not be seen or delineated by dye and may be missed; though there is no information about fate of missed sinus, or how often such tracts are missed despite use of MB? Sondenaa and Pollard[4] explain, "It is not known whether recurrence is caused by unrecognised sinuses, overlooked pits, newly developed pits, or by wound infection following primary treatment. Wound infection may be a promotive factor." Actual cause of recurrence lies in poor *'execution of surgical technique'* as warned by Ireton et al[13] and Coll[14] than attempt to eradicate sinus tract. It begs to peep deeper into pathological tissue reactions leading to complications/recurrences. Optionally one may rely on *granulation tissue dot-like beefy-red colour* of cut ends of tracts of CSPSD against *golden-yellow fatty subcutaneous tissue*. If one looks for *beefy-red dot* intently and keep tracing it, will lead to last trace of tract, using electrocautery carefully as charred tissue may *mask red-dot view*.

Lord and Millar[15] (1965) did elliptical surgical pit excision without opening them by debridement and cleaning of unroofed cavity/tracts by nylon brushes without sutures. Bascom[16] (1980) reported individual excision of midline pits and laterally-placed cut to clean pilonidal cavity. Bascom sutured midline operative wounds and excised lateral tracts. Gips et al[17] (2008) presented a technique under local anesthesia using *Keyes trephines* to remove tracts leading to subcutaneous cavities. Patients suffering from ASPSD or CSPSD, primary or RSPSD were offered operative treatment. Cotton applicators dipped in 3 percent hydrogen peroxide ($H_2O_2$) solution were used to retrieve debris from pilonidal cavity. This is done blindly by trephines, curved forceps and bone curettes to core out scar tissue etc fortified by $H_2O_2$. Patients presenting with pilonidal abscesses were operated on day of diagnosis without premedication or antibiotics. Fibrous track excision seems incoherent as healing by fibrosis and scar is sine qua non. These papers however paved the way for era of less ablative techniques. Neola et al[18] (2014) propounded their *'Scarless Outpatient Ablation of Pilonidal sinus'* (SOAP) technique, "... a new minimally invasive treatment..." They[18] stated, "The histological evidence of the lack of a wall in a pilonidal sinus may justify the use of minimally invasive therapeutic methods, which do not call for full excision of the sinus but solely for the removal of ectodermal debris within it." They[18] missed stating clinical stage, i.e. *ASPSD or CSPSD or A/CSPSD* while observing *'lack of a wall' and 'ectodermal debris within it'*. It intrigues as there must be *deeper connective tissue layer* carpeted by superficial epithelial or granulation tissue facing lumen of CSPSD vis-à-vis ASPSD. The *deeper connective tissue layer* gets thicker with time sinus and cavity has lasted. They[18] used local anesthesia with 0·9 mm barbed shaftlike sturdy Farrell applicator and fistulous orifice lavage with 3% $H_2O_2$ for hemostasis. Finally scraping of skin orifices is performed to allow 'reepithelialisation and closure by secondary intention', i.e. by fibrosis and scar. $H_2O_2$ causes oxidative tissue damage (Loo et al[19]) and may cause $O_2$ gas embolism (Shaw et al[20]). Once surgical toilet of sinus is done properly; tissue necrotic

steps seem inimical by delaying healing. Milone et al[21] (2017) propounded, "A novel approach for treatment of sacrococcygeal pilonidal sinus: *less is more*"; endorsed Soll et al[22] (2008) technique of subcutaneous sinusectomy. Their complication rate was 6.5% with median time for WH after sinusectomy 5 weeks; median time off work 2 weeks and recurrence rate 5%. This followed seminal papers of Meinero et al[23] (2013) and Milone et al[24] (2014) with rise in day care and minimal invasive techniques for treating SPSD; for little gain. Garg et al[25] (2015) study of laying open (deroofing) and curettage of sinus of pilonidal disease showed pooled rate of 4.47% for recurrence, 1.44% complications, 34.59 min operating time, 21–72 days for healing time and 8.4 days' return to work. They[25] dubbed these as high success rate, low complication rate, short operating time and early return to normal work. This Author extends it further to *'least is best in All Weathers'* by '*simple curettage of CSPSD*' without damaging *friendly deeper fibrous tissues*, if needed, repeated few times until final healing in few weeks. As fibrous wall does not develop in *ASPSD*, *curettage of cavity alone* is needed. Repeat curettage in continued treatment is not failure or deficient technique but stepladder mechanism towards final resolution to prevent recurrences/complications and its repetition in future is not difficult either, since it is "walk-in-walk-out" procedure. Use of corrosives, e.g. phenol, $H_2O_2$, silver nitrate, Monsel's or Dakin's solution, electrosurgical or Laser coagulation, VAAPS or EPSiT/PEPSIT/EPSI-R (Endoscopic Pilonidal Sinus-Resection) techniques, simple day-case surgery, or glues etc, few to name need second look in light of WH mechanisms. Any procedure inciting tissue necrosis should be categorised unphysiological and counterproductive.

**Epilation** - There is no consensus for epilation of cleft for hygiene or prophylaxis about hairs getting inside SPSD to prevent recurrences or complications. *Alternately* natal cleft hairs may help by forming net to entrap wandering hairs and preclude their entry inside pits. *Secondly* long terminal hairs in cleft form padding between two skin sides prevent rubbing each other, save excoriation of humid skin and loose hairs do not get to erode skin by getting trapped in hair-net. *Thirdly*, regrowing cut hair tips are sharp and prick natal skin when rubbing each other during walking, which is highly irritating, painful and preclude its compliance. *Fourthly*, two shaved bare sides of unlubricated natal skins sogged in saline sweat become highly vulnerable to ulceration by shearing, friction and vacuum created in movements. A light creamy-oily on-off skin application may keep cleft skin soft to withstand such subtle trauma. Armstrong and Barcia[26] (1994) did weekly 5-cm strip shave in natal cleft from anus to presacrum until healing, with further weekly shaving for recurrence as well as renewed perineal hygiene. They[26] stated, "Recurrence rates were not specifically monitored with either therapy"; and[26] premised, "It appears that pilonidal sinus disease is a self-limited condition that disappears with age (usually by 30 years). ... Thus recurrence becomes a simple management issue and not a treatment failure. ... Conservative management may not work as well for excisional recurrence." Their[26] method has not been duplicated by another group thus far. Stirnemann and Blasimann[27] (1983) concluded, "One half of all patients neglected our recommendation and only 2/3 of the remaining patients practiced this regularly for a shorter or longer period of time. There were more recurrencies (sic) among the patients with regular epilation than the others who neglected epilation." Petersen et al[28] (2009) reechoed that SPSD recurred more frequently in patients who performed razor epilation than in those who did not and concluded that traditional razor hair removal should not be recommended as integral part of postoperative care in outpatient setting. Epilation creams fair no better. Laser epilation used recently for natal cleft is still in trial stage. Their use involves multiple side effects as shown by Benedetto and Lewis[29], Prohaska and Hohman[30] and cost-availability is other constraint. Khanna and Rombeau[31] added, "... but pain was a significant disadvantage." And continued, "...effective method of hair removal (Laser) and, although long lasting, is only temporary." It is normal to shed 50 to 100 hairs daily by everybody (AAD[32]). Shed hairs fall down from upper body towards natal cleft but their fate is unknown. Utility of cleft hair removal/shaving may be questioned if we postulate that hairs involved come from scalp and nearby skin than natal cleft (Doll et al[33,34]). Local hygiene in perineal and natal areas cannot be better stressed as advised by Gips et al[17] also. It led this Author to omit shave and stress on better *local hygiene*. Incidence of SPSD is less in India despite her tropical climate, too hot in peak summer with sweating, uneven social and hygienic conditions, stiff thick long terminal hairs compared to Caucasians.

**Sitting postures and SPSD healing** - Avoiding sitting in sacroischial position postoperatively or prophylactically at anytime, is important to prevent SPSD by *reducing pressure and tissue tension over distal sacrum* as Jiang and Rinkevich[35] postulated, "Studies on mechanotransduction indicate that fibroblasts sense microenvironmental tension and convert mechanical forces into biological signals, which in turn regulate the fibrotic responses ... whereas placing tape on wounded skin to reduce tension has been shown to lead to reduction in the severity of skin scars ... that wound closure is driven by fibroblastic migrations controlled by mechanical forces at the wound edge, and minimally by fibroblast proliferation." Ayadi et al[36] reinforced it in section 'Mechanosensors in Fibrosis', "The harmonic combination of three main physical forces, including pressure, stretch/strain, and shear holds fibroblasts together in a three-dimensional structure composed of specific ratios of various ECM components. Injury disrupts the composition of the ECM, and the ratio of type III/type I collagen increases during scar development." They[36] continue in 'Role of the Fascia in

Wound Closure and Fibrosis', "Current investigations are revealing a unique role for the subcutaneous fascia in wound closure and scarring." These findings caution us to avoid any kind of postoperative pressure on lower sacral area to prevent postoperative wound related problems and wound closure surgical techniques. Thus mattress or tension sutures could be unphysiological as they cause profound tissue tension. SPSD has unique human evolutional issue sitting on butts during working hours in chair. Sitting postures can vary but everyone puts pressure on butt area during sitting with *anterior pelvic tilt* when anterior superior iliac spines lie below the level of posterior superior iliac spines at horizontal plane; *interface pressure* of upper body lie on thighs and ischial tuberosities with good muscle padding between bones and skin. Sitting in reclining position resting trunk against backrest of chair in sacroischial *posterior pelvic tilt* when posterior superior iliac spines lie at lower level than its anterior counterpart; trunk impinges on *lower sacrum* devoid of muscle cushion, whereby *skin tissues* bear interface pressure directly. It is recalled that *sacrococcygeal joint* is symphysis between tip of sacrum and base of coccyx lined by hyaline cartilage joined by fibrocartilage disc with *good sagittal movement* precluding pressure on coccyx in sitting and keeps it out of harm's way from pressure tension bearing and it prompted *this Author* to label it '*sacral pilonidal sinus disease (SPSD)*'. Cole et al[37] state, "Normal arteriole, capillary, and venule pressures are 32, 20, and 12 mmHg, respectively. Sitting position can produce pressure as high as 300 mmHg at the ischial tuberosities." This pressure gradient shall rise higher near tip of sacrum during sacroischial posterior pelvic tilt on sitting. It remains to be seen as to how much this pressure gradient is contributory in etiopathology of SPSD apart from theory of skin pits and hairs especially when some SPSD cases do not show hairs or pits[4]? Bi et al[38] state, "The recurrence rate of PSD has been a heated research topic that varies greatly in diferent factors including surgical interventions and geography. Patients' satisfaction and life quality after surgery have been seriously influenced by the re-emergence of PSD." Stauffer et al[5] argued, "Thus, any report of a given surgical procedure without specified follow up may contain a10 fold higher or lower true recurrence as the postulated one." Thus recurrence-free survival instead of surgical therapy determines PQOL (Doll et al[39]). Influence of MB on recurrence rate has been referred earlier (Doll et al[11]).

**SPSD treatment's Indian scenario** – SPSD was known to ancient Indian Surgeon *Acharya Sushrut* millennia ago, who is better known in the West for his Nasa-(nose)-sandhan-(prying into secrets or collimation)-vidhi-(technique), i.e. Rhinoplasty (Dnyaneshwar[40]). Dwivedi[41] explained, "The 'Sushrut Samhita (Samhita = Treatise)', describes a condition *'Shalyaj Nadi Vran'* which is akin to 'Pilonidal sinus'.'*Shalyaj nadi vran'* is a track which is described to be due to presence of pus, fibrosed unhealthy tissue & hair etc inside left unnoticed. Sushrut advocated unique minimally invasive treatment, '*Kshar Sutra*', (Kshar = alkali, Sutra = thread or Seton) for management of *Nadi vran* (PNS)." Akhtar et al[42] tried it on 5 cases and concluded, "Kshar sutra is a minimal invasive procedure in Pilonidal sinus which has encouraging results but need large sample and an RCT to provide quality evidence." There are scarce publications from Indian subcontinent about SPSD and use of phenol is unusual in India.

Use of **Aloe vera** and **Curcumin** for skin disorders is highly effective whose medicinal potential remain unexplored. **Aloe vera gel**[43,44] applied in natal cleft shall soften and make the skin resistant to generally encountered trauma, e.g. friction, shearing, pressure and vacuum and can help both in prevention and cure of SPSD. It needs gentle application once or twice daily and rubbed on skin to get its full effect. Regular use gives soft glowing velvety texture to skin and hairs. Those with stiff hairs and dry itchy skin must use it with gratifying result. Rarely may it cause mild skin irritation that does not need special care and ameliorates spontaneously and does not preclude its continued use except caution to apply gently. Caution is exercised while applying Aloe vera to keep clear of eyes, lest it causes mild eye discomfort needing face/eye wash with clean water.

**Curcumin** is polyphenol, less known for medicine and is principal curcuminoid of turmeric (*Curcuma longa*), member of ginger family. It is sold as herbal supplement, cosmetic ingredient, food flavoring, food coloring and spice. Corona has brought it in lime light as immunity booster. Hewlings and Kalman[45] state, "Curcumin is being recognized and used worldwide in many different forms for multiple potential health benefits." It has been approved by the US Food and Drug Administration (FDA) as *'Generally Recognized As Safe' (GRAS)*, and good tolerability and safety profiles have been shown by clinical trials, even at doses between 4000 and 8000 mg/day. Curcumin has very good antibacterial, antifungal, antiviral, etc action.[45] Fadus et al[46] found Curcumin as anti-inflammatory and anti-neoplastic agent. Curcumin used with *Ghee* (is not clarified butter as known in the West) or *mustard oil* solution instilled in CSPSD will help for diagnostic (by yellowish colour) and therapeutic antiseptic agent. Both products – *Aloe vera gel and Curcumin* have been tried by Author himself and clinically with extremely gratifying results. These products are innocuous, useful and can help SPSD, summons further research. People with stiff beards and scalp hairs, and pimples besides other skin lesions are strongly advised to try these products.

## CONCLUSION

SPSD is multifactorial obstinate disease resistant to current treatments and needs paradigm shift in management to heal the youth. A new scalpelless access minimal invasive technique for '*least is best in all weathers*' suitable in all stages is advocated. Two highly useful innocuous natural products, i.e. Aloe vera and

Curcumin are initiated for awareness and further clinical trials.

Limitations of this study are paucity of SPSD cases in India making it difficult for scientific audit and publications.

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**REFERENCES**

1. Kooistra H P. Pilonidal Sinuses: Review of the Literature and Report of three Hundred Fifty Cases. Am J Surg, 1942; 55(1): 3-17. file:///C:/Users/H%2OP/Downloads/s0002-9610(42)90210-1.pdf (on 9/9/21)
2. Beal EM, Lee MJ, Hind D, Wysocki AP, Yang F, Brown SR. A systematic review of classification systems for pilonidal sinus. Techniques in Coloproctology, 2019; 23: 435–443. https://link.springer.com/content/pdf/10.1007/s10151-019-01988-x.pdf (on 24/10/21)
3. Wysocki AP, Andersson RE, Gips M, Girgin M, Guner A, Immerman S, et al. Towards a classification for sacrococcygeal pilonidal disease – Berlin 2017 PSJ, 2018; 4(1): 5-12.6 https://www.pilonidal.com.au/ojs/ojs-3.1.0-1/index.php/PSJ/article/view/40/26 (on 2/11/21)
4. Søndenaa, K. & Pollard, M. L. Histology of chronic pilonidal sinus. APMIS, 1995; 103: 267-272, file:///C:/Users/H%20P/Downloads/j.1699-0463.1995.tb01105.x.pdf (available on 5/10/21)
5. Stauffer VK, Luedi MM, Kauf P, Schmid M, Diekmann M, Wieferich K, et al. Common surgical procedures in pilonidal sinus disease: A meta-analysis, merged data analysis, and comprehensive study on recurrence. Sci Rep., 2018; 8: 3058. | https://doi.org/10.1038/s41598-018-20143-4 https://www.nature.com/articles/s41598-018-20143-4.pdf (On 20/09/2021)
6. Brearley R. Pilonidal Sinus – A New Theory of Origin. Br J Surg, 1955; 43: 62-68. https://doi.org/10.1002/bjs.18004317708 (on 05/10/2021)
7. Flannery BP and Kidd H A. A review of pilonidal sinus lesions and a method of treatment. Postgrad med J., May 1967; 43: 353-358. https://pmj.bmj.com/content/postgradmedj/43/499/353.full.pdf (on23/7/21)
8. Franckowiak J J and Jackman R J. The Etiology of Pilonidal Sinus. Dis Colon Rectum, 1962 Jan-Feb; 5: 28-36. https://doi.org/10.1007/BF02616408 (on 20/10/21)
9. Bascom J, Bascom T. Failed Pilonidal Surgery: New Paradigm and New Operation Leading to Cures. Arch Surg, 2002; 137(10): 1146-1150. doi:10.1001/archsurg.137.10.1146 https://jamanetwork.com/journals/jamasurgery/fullarticle/212939 (on 13/10/2021)
10. Doll D, Bosche F, Hauser A, Moersdorf P, Sinicina I, Grunwald J, et al. The presence of occipital hair in the pilonidal sinus cavity—a triple approach to proof. International Journal of Colorectal Disease, 2018; 33: 567–576. https://doi.org/10.1007/s00384-018-2988-8 https://link.springer.com/article/10.1007/s00384-018-2988-8 file:///C:/Users/H%20P/Desktop/PNS%20file/D%20Doll/New%20folder/The%20presence%20of%20occipital%20hair%20in%20the%20pilonidal%20sinus%20cavity%E2%80%94a%20triple%20approach%20to%20proof.pdf (on 29/10/2021)
11. Doll D, Novotny A, Rothe R, Kristiansen J E, Wietelmann K, Boulesteix A, et al. Methylene Blue halves the long-term recurrence rate in acute pilonidal sinus disease. Int J Colorectal Dis., 2008; 23: 181–187. https://doi.org/10.1007/s00384-007-0393-9 https://link.springer.com/article/10.1007%2Fs00384-007-0393-9#citeas (on 24/10/21)
12. Idiz U O, Aysan E, Firat D, Bozkurt S, Buyukpinarbasili N, Muslumanoglu M. Safety and/or effectiveness of methylene blue-guided pilonidal sinus surgery. Int J Clin Exp Med., 2014; 7(4): 927–931. PMCID: PMC4057842 PMID: 24955163 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4057842/#b21 (24/10/21)
13. Ireton J E, Unger J G, Rohrich R J. The Role of Wound Healing and Its Everyday Application in Plastic Surgery: A Practical Perspective and Systematic Review. Plast Reconstr Surg Glob Open, 2013; 1(1): e10-e19. Published online 2013 May 7. doi: 10.1097/GOX.0b013e31828ff9f4 PMCID: PMC4174176 PMID: 25289204 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4174176/ (on 23/10/21)
14. *COLL*, I. *PILONIDAL SINUS*. *S.A.* TYDSKRIF. VIR. GENEESKUNDE. 30 Julie *1960*. *651*-56. file:///C:/Users/H%20P/Downloads/174482-Article%20Text-446651-1-10-20180713%20(2).pdf (on 28/10/21)
15. Lord P H, Millar D M. Pilonidal Sinus: A Simple Treatment. Brit J Surg, 1965; 52(4): 298-300. https://doi.org/10.1002/bjs.1800520413. https://academic.oup.com/bjs/article-abstract/52/4/298/6234983?redirectedFrom=fulltext (on 25/10/21)
16. Bascom J. Pilonidal disease: origin from follicles of hairs and results of follicle removal as treatment. Surgery, 1980; 87: 567–72. https://www.pilonidal.org/wp-content/uploads/2016/02/Bascom_Origins_1980_2006.pdf (on 5/12/2021)
17. Gips M, Melki Y, Salem L, Weil R, Sulkes J. Minimal Surgery for Pilonidal Disease Using Trephines: Description of a New Technique and Long-Term Outcomes in 1,358 Patients. Dis Colon Rectum, 2008 Nov; 51(11): 1656-62; discussion

1662-3. doi: 10.1007/s10350-008-9329-x. Epub 2008 May 31. PMID: 18516645 DOI: 10.1007/s10350-008-9329-x https://www.pilonidal.org/wp-content/uploads/2016/02/Minimal-Surgery-for-Pilonidal-Disease.pdf file:///C:/Users/H%20P/Downloads/Minimal20Surgery20for20Pilonidal20Disease%20(4).pdf (on 5/12/2021)

18. Neola B, Capasso S, Caruso L, Falato A, Ferulano G P. Scarless outpatient ablation of pilonidal sinus: a pilot study of a new minimally invasive treatment. International Wound Journal, 2014; 13(5): 705-708. https://doi.org/10.1111/iwj.12350 https://onlinelibrary.wiley.com/doi/10.1111/iwj.12350 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7949713/ (18/10/2021)
19. Loo A E K, Wong Y T, Ho R, Wasser M, Du T, Ng W T, et al. "Effects of Hydrogen Peroxide on Wound Healing in Mice in Relation to Oxidative Damage". PLOS ONE, 2012; 7(11): e49215. Bibcode:2012PLoSO... 749215L. doi:10.1371/journal.pone.0049215. PMC 3496701. PMID 23152875. ISSN: 19326203 https://scholarbank.nus.edu.sg/handle/10635/100546 (on 10/12/2021) https://doi.org/10.1371/journal.pone.0049215 (on 10/12/2021)
20. Shaw A, Cooperman A, Fusco J. "Gas embolism produced by hydrogen peroxide". N Engl J Med., 1967; 277(5): 238–241. doi:10.1056/nejm196708032770504. PMID 6029311. https://www.nejm.org/doi/full/10.1056/NEJM196708032770504 (on 10/12/2021)
21. Milone M, Fernandez L M S, Manigrasso M, Burati M, Milone F, De Palma G D. Pilonidal sinus and endoscopic surgery – myth or reality? Ann Laparosc Endosc Surg, 2017; 2: 175. https://ales.amegroups.com/article/view/4281/5120 https://ales.amegroups.com/article/viewFile/4281/5119 (on 24/2/21)
22. Soll C, Hahnloser D, Dindo D, Clavien PA, Hetzer F. A novel approach for treatment of sacrococcygeal pilonidal sinus: less is more. Int J Colorectal Dis., 2008; 32: 177–180. DOI 10.1007/s00384-007-0377-9 https://doc.rero.ch/record/316350/files/384_2007_Article_377.pdf (on 23/11/21)
23. Meinero P, Mori L, Gasloli G. Endoscopic pilonidal sinus treatment (E.P.Si.T.).Tech Coloproctol, 2013; 18: 389-92. DOI 10.1007/s10151-013-1016-9 http://www.piercarlomeinero.it/doc/EPSiT_article.pdf (on 2/1/21)
24. Milone M, Musella M, Sardo A D S, Bifulco G, Salvatore G, Fernandez L M S, et al. Video-assisted ablation of pilonidal sinus: A new minimally invasive treatment—A pilot study. Surgery, 2014; 155: 562-6. http://dx.doi.org/10.1016/j.surg.2013.08.021 file:///C:/Users/H%20P/Downloads/Reply_to_Comment_on_Video-assisted_ablation_of_pil%20(3).pdf https://core.ac.uk/download/pdf/82323656.pdf (on 1/1/21)
25. Garg P, Menon G R, Gupta V. Laying open (deroofing) and curettage of sinus as treatment of pilonidal disease: a systematic review and meta-analysis. ANZ Journal of Surgery, 2015; 86(1-2): 27-33. https://doi.org/10.1111/ans.13377 file:///C:/Users/H%20P/Downloads/clinpract-11-00028-v2.pdf file:///C:/Users/H%20P/Downloads/Laying_open_deroofing_and_curettage_under_local_an.pdf (on 2/1/21)
26. Armstrong J H and Barcia P J. Pilonidal Sinus Disease The Conservative Approach. Arch Surg, 1994 Sep; 129(9): 914-7; discussion 917-9. PMID: 8080372 doi: 10.1001/archsurg.1994.01420330028006. https://www.pilonidal.org/wp-content/uploads/2016/02/armstrong_barcia.pdf (on 2/1/21)
27. Stirnemann H, Blasimann B. Is preventive epilation following sacral dermoid operation useful or ineffective? Chirurg, 1983 Aug; 54(8): 548-9. (Abstract) PMID: 6617342 https://pubmed.ncbi.nlm.nih.gov/6617342/ (on 28/11/21)
28. Petersen S, Wietelmann K, Evers T, Hüser N, Matevossian E, Doll, D. Long-Term Effects of Postoperative Razor Epilation in Pilonidal Sinus Disease. Dis Colon Rectum, 2009 Jan; 52(1): 131-4. PMID: 19273968 DOI: 10.1007/DCR.0b013e3181972505 https://pubmed.ncbi.nlm.nih.gov/19273968/ (on 28/11/21) file:///C:/Users/H%20P/Downloads/Petersen2009Long-TermEffectsofPostoperativeRazorEpilationinPilonidalSinusDisease%20(1).pdf (on 28/11/21)
29. Benedetto A V and Lewis A T. Pilonidal Sinus Disease Treated by Depilation Using an 800 nm Diode Laser and Review of the Literature. Dermatol Surg, 2005; 31: 587–591. file:///C:/Users/H%20P/Desktop/Pilonidal%20Sinus%20Disease%20Treated%20by%20Depilation%20Using%20an%20800%20nm%20Diode%20Laser%20and%20Review%20of%20Literature.pdf (on 8/11/21)
30. Prohaska J and Hohman M H. Laser Complications. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. https://www.ncbi.nlm.nih.gov/books/NBK532248/ (on 8/11/21)
31. Khanna A, Rombeau J L. Pilonidal Disease. Clin Colon Rectal Surg. 2011 Mar; 24(1): 46–53. doi: 10.1055/s-0031-1272823 PMCID: PMC3140333 PMID: 22379405 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC314

0333/pdf/ccrs24046.pdf https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3140333/ (on 15/10/21)
32. AAD. DO YOU HAVE HAIR LOSS OR HAIR SHEDDING? https://www.aad.org/public/diseases/hair-loss/insider/shedding (on 23/11/21)
33. Doll D, Bosche F D, Stauffer V K, Sinicina I, Hoffmann S, van der Zypen D, et al. Strength of Occipital Hair as an Explanation for Pilonidal Sinus Disease Caused by Intruding Hair. Dis Colon Rectum 2017; 60: 979–986. DOI: 10.1097/DCR.0000000000000795 file:///C:/Users/H%20P/Desktop/PNS%20file/D%20Doll/New%20folder/Strength%20of%20Occipital%20Hair%20as%20an%20Explanation%20for%20Pilonidal%20Sinus%20Disease%20Caused%20by%20Intruding%20Hair.pdf http://www.viff-ev.de/uploads/7/1/5/8/71588635/doll_d._et_al.__2017_._strength_of_occipital_hair_as_an_explanation_for_pilonidal_sinus_disease_caused_by_intruding_hair..pdf (on 14/11/21)
34. Doll D, Wilhelm D, Ommer A, Albers K, Mordhorst H, Iesalnieks I, et al. Immediate cut hair translocation to the intergluteal fold in the hairdressers shop – another link to pilonidal sinus disease: Cut hair translocation and PSD. PSJ, 2019; 5(1): 23-32. https://www.pilonidal.com.au/ojs/ojs-3.1.0-1/index.php/PSJ/article/view/45 https://www.pilonidal.com.au/ojs/ojs-3.1.0-1/index.php/PSJ/article/view/45/30 (on 14/11/21)
35. Jiang D, Rinkevich Y. Scars or Regeneration?—Dermal Fibroblasts as Drivers of Diverse Skin Wound Responses. *Int. J. Mol. Sci.*. 2020; *21*(2): 617. https://doi.org/10.3390/ijms21020617 (This article belongs to the Special Issue Recent Advances in Pathophysiology of Fibrosis and Scarring) https://www.mdpi.com/1422-0067/21/2/617 (on 7/10/2021)
36. Ayadi A E, Jay J W, Prasai A. Current Approaches Targeting the Wound Healing Phases to Attenuate Fibrosis and Scarring. *Int. J. Mol. Sci.*, 2020; *21*(3): 1105. https://doi.org/10.3390/ijms21031105 (This article belongs to the Special Issue Recent Advances in Pathophysiology of Fibrosis and Scarring) https://www.mdpi.com/1422-0067/21/3/1105/htm (on 7/10/2021)
37. Cole P, Heller L, Bullocks J, Hollier L H, Stal S. The Skin and Subcutaneous Tissue. In: Schwartz's Principles of Surgery; Edr-in-Chief, Brunicardi FC. Ninth Edn. McGraw-Hill Medical; USA, 2010: 409.
38. Bi S, Sun K, Chen S & Gu J. Surgical procedures in the pilonidal sinus disease: a systematic review and network meta-analysis. Scientific Reports | 2020; 10: 13720. | https://doi.org/10.1038/s41598-020-70641-7 https://www.nature.com/articles/s41598-020-70641-7.pdf (18/11/21)
39. Doll D., Luedi M.M., Evers T, Kauf P, Matevossian E. Recurrence-free survival, but not surgical therapy per se, determines 583 patients' long-term satisfaction following primary pilonidal sinus surgery. Int J Colorectal Dis 30, 605–611 (2015). https://doi.org/10.1007/s00384-015-2130-0 file:///C:/Users/H%20P/Downloads/art3A10.10072Fs00384-015-2130-0%20(2).pdf https://link.springer.com/article/10.1007%2Fs00384-015-2130-0#citeas (on 20/10/21)
40. Dnyaneshwar K J. Plastic Surgery in Ayurveda. JOJ Orthoped Ortho Surg, 2017; 1(1): 555552. DOI: 10.19080/JOJOOS.2017.01.555552 https://juniperpublishers.com/jojoos/pdf/JOJOOS.MS.ID.555552.pdf https://juniperpublishers.com/jojoos/JOJOOS.MS.ID.555552.php (on 9/12/2021)
41. Dwivedi A P. Management of pilonidal sinus by *Kshar Sutra*, a minimally invasive treatment. Int J Ayurveda Res., 2010 Apr-Jun; 1(2): 122–123. doi: 10.4103/0974-7788.64408 PMCID: PMC2924975 PMID: 20814527 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2924975/ (on 8/12/2021)
42. Akhtar M, Gupta H, Mishra S, Rangwala M, Kad A. Kshar sutra in Pilonidal sinus: a minimal invasive modality of management. Int Surg J., 2017; 4(2): 834-837. pISSN 2349-3305 | eISSN 2349-2902 DOI: http://dx.doi.org/10.18203/2349-2902.isj20170247 https://www.ijsurgery.com/index.php/isj/article/view/1015/890 (on 8/12/2021)
43. Bawankar R, Singh P, Subramanian B. Bioactive Compounds and Medicinal Properties of Aloe Vera L.: An Update. Journal of Plant Sciences, 2014; 2(3): 102-107. doi: 10.11648/j.jps.20140203.11 file:///C:/Users/H%20P/Downloads/reviewpaper.pdf (on 9/12/2021)
44. Vogler B K, Ernst E. *Aloe vera*: a systematic review of its clinical effectiveness. *Br J Gen Pract*., 1999; 49: 823-828. PMCID: PMC1313538 PMID: 10885091 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1313538/ (on 9/12/2021) 9/12/2021)
45. Hewlings S J and Kalman D S. Curcumin: A Review of Its' Effects on Human Health. Foods, 2017 Oct; 6(10): 92. doi: 10.3390/foods6100092 PMCID: PMC5664031 PMID: 29065496 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5664031/ (on 10/12/2021)
46. Fadus M C, Lau C, Bikhchandani J, Lynch H T. Curcumin: An age-old anti-inflammatory and anti-neoplastic agent. Journal of Traditional and Complementary Medicine, 2017 July; 7(3): 339-346. https://www.sciencedirect.com/science/article/pii/S2225411016302528 (on 10/12/2021)