Outcomes of silver nitrate use in perianal fistula: are perianal fistulas still a nightmare for surgeons?



Ann Ital Chir, 2019 90, 5: 480-484 pii: S0003469X1902921X Epub Ahead of Print - June 20 free reading: www.annitalchir.com

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Outcomes of silver nitrate use in perianal fistula: are perianal fistulas still a nightmare for surgeons?

INTRODUCTION: In this study, we aimed to evaluate outcomes of % 20 silver nitrate (SNS) application in perianal fistula patients.

MATERIAL AND METHOD: All patients who received 20 % SNS treatment for intersphincteric and transsphincteric fistulas between January 2017 and December 2017 were included in our study. Patients were invited for control examinations after one week. Patients with continued discharges after single dose of SNS kept receiving solution six more times with one month intervals. Stopping of discharges were considered as finalization of the study. Cases with discharges after 6 episodes of SNS were described as insufficient healing. The patients were grouped according to healing status (healing patients in Group 1, non-healing patients in Group 2). Gender, age, follow-up times, date of the complaint start, number of SNS application, type of fistula and frequency of fistula discharge were recorded. RESULTS: A total of 49 patients were included in this study. Forty-four (% 89.8) of them were male. The mean age was 44.9.

RESULTS: A total of 49 patients were included in this study. Forty-four (% 89.8) of them were male. The mean age was 44.9. Twenty-eight patients (57.1%) had intersphincteric fistulas, while twenty-two patients (42.9%) had intersfinteric fistulas. Mean number of SNS application was 4.1 (1-6). Patients in Group 1 had mean number of SNS therapy as 3.42 (1-6), whereas cases in Group 2 this number was 5.5 (3-6). Patients were observed approximately for 8.84 months (6-12). We were able to reach sufficient healing in 13 (%26) cases via 2 times and 20 (%40) cases via 3-6 times application of SNS.

CONCLUSION: We were able to reach complete healing rates as % 67 with SNS application in perianal fistula. This is a non-invasive procedure and could be applied in out patient clinics, with low costs. Less complication rates enhances attraction. Patients will not loose chance of surgical treatment. Therefore, we believe SNS may be used as first line treatment in perianal fistulas.

KEY WORDS: Follow-up, Perianal fistula, Silver nitrate

Introduction

Perianal fistulas mainly originate from abcesses of cryptoglandular infections occurred in canalis analis. Any kind of inflammatory process can lead to various tunnels between skin, anal canal and rectal mucosa. Incomplete healing of these tunnels plays major role in fistula formation ^{1,2}. Perianal fistulas are frequently seen and refractory to conservative treatments. Surgery remains major therapy method ³, but complete healing following surgical procedures are rarely seen. High recurrence rates, repeated surgeries, injury of external sphincters and disturbance of Qualty of life remain major obstacles for successful treatment ⁴⁻⁶. There are various therapeutical methods for fistulas according to literature, but none of them can be considered as an ideal therapy ⁷. We tried to describe an alternative non-invasive method. It can be easily applied with less complications. Development of an epithelial surface remain major reason for incomplete healing of fistulas ⁸. Surgical methods are in favour of fistula tract removal, but may cause

Pervenuto in Redazione Agosto 2018. Accettato per la pubblicazione Settembre 2018

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various complications. Topical application of silver nitrate solution (SNS) may cause ablation of epithelial surface via chemical effect. Fibrosis of fistula tract due to tissue damage via SNS may lead to the closure of this tunnel. Less complication rates can be seen in absence of surgical procedures.

In this present study we aimed to evaluate outcomes of % 20 SNS application in perianal fistula patients.

Material and Method

PATIENTS

All patients who received SNS treatment for intersphincteric and transsphincteric fistulas between January 2017 and December 2017 were included in this prospective study. The study design was approved by institutional ethics committee. A written consents were obtained from all patients prior to application of SNS. The patients with Crohns disease and/or cancer history were excluded. All patients were evaluated via MRI studies prior to application and after the procedure, to describe efficacy of treatment radiologically. The cases were observed at least 6 months.

Procedure

All procedures were done in out patient clinics. Patient was positioned in lateral decubitus status. Opening of the fistula was controlled via 18 gauge neddle cover. Debridement of fistula tract was done via endoscopic brushes. Needle was positioned at the end of internal opening of the fistula tract. Application of % 20 SNS was started at this point. We injected material very slowly. In presence of pain, neddle was removed backwards, until the external opening. Details of this procedure was depicted in Figs. 1 A, B. External opening was covered via sponges for protection of the skin.

FOLLOW UP

Patients were invited for control examinations after one week. Patients with continued discharges after single dose of SNS kept receiving solution six more times with one month intervals. Prior to every SNS application patients were questioned for debit of fistula discharge. Stopping of discharges were considered as finalization of the study. Cases with discharges after 6 episodes of SNS were described as insufficient healing. Also, cases without discharge were evaluated via MRI studies after 2 months. Active fistulas, puses and inflammatory processe are seen as hypotense figures in T1 sequences, whereas these motives are hypertense in T2 sequences. Following application of SNS, hypotense motives were seen due to fibrosis in healing process. Also due to fibrosis no contrast material can be seen in MRI studies. Therefore, areas with absence of contrast material were considered as healed according to radiological evaluation, both in T1 and T2 sequences (Figs. 2 A, B).

PARAMETERS

The patients were grouped according to healing status (healing patients in Group 1, non-healing patients in Group 2). Gender, age, follow-up times, date of the complaint start, number of SNS application, type of fistula and frequency of fistula discharge were recorded (Table I).



Fig. 1: A) Debridement of fistula tract via endoscopic brush. B) Application of SNS after canulation of fistula tract.



Fig. 2: Axial contrast enhanced fat-suppressed T1-weighted MR images obtained before (A) and after (B) injection of silver nitrate solution. A, Highly enhancing intersphincteric fistula (arrow). B, Nonenhanced residual fistulous tract (arrow) imaged 2 months later. The fistula tract appears as incomplete linear structures of low signal intensity, with no enhancement after administration of contrast material. The internal opening of the tract is not seen at its usual location (arrowheads).

	All patients (n=49)	Patients via sufficient healing (n=33)	Patients via insufficient healing (n=16)	P value
Gender Male Female	44 5	28 5	16 0	0.100
Age	44.94 (16-83)	44.36 (16-83)	46.13 (25-62)	0.550
Follow-up time (months)	8.84 (6-12)	8.94 (6-12)	8.63 (6-12)	0.858
Duration of discharge prior to treatment (months)	11.94 (4-36)	9.97 (4-18)	16.00 (6-36)	0.065
Fistula Primary Rcurrent	463	330	133	0.010
Number of application	4.10 (1-6)	3.42 (1-6)	5.50 (3-6)	0.000
Fistula type Intersphincteric Transsphincteric	21 (%42.9) 28 (%57.1)	10 (%30.3) 23 (%69.7)	11 (%68.8) 5 (%31.3)	0.011
Frequency of fistula discharge				0.000
None	18 (%36.7)	18 (%54.5)		
Intermittant	15 (%30.6)	15 (%45.5)		
Continously	16 (%32.7)		16 (%100)	

TABLE I - Patient characteristics according to groups with treatment results.

Statistical Method

SPSS 20 program was used. Normal distribution data was analyzed via t-test. Abnormal data was described with median and standard deviation and analyzed via Mann-Whitney U test. Qi square and Fisher tests were also utilized. Normality of data was analyzed via Kolmogorov-Smirnov test.

Results

Atotal of 49 patients were included in this study. Forty-four (% 89.8) of them were male. The mean age was 44.9. Twenty-eight patients (57.1%) had intersphincteric fistulas, while twenty-two patients (42.9%) had intersfinteric fistulas. Mean number of SNS application was 4.1 ¹⁻⁶. Patients in Group 1 had mean number of SNS therapy as 3.42 ¹⁻⁶, whereas cases in Group 2 this number was 5.5 ³⁻⁶. Patients were observed approximately for 8.84 months ⁶⁻¹². We were able to reach sufficient healing in 13 (%26) cases via 2 times and 20 (%40) cases via 3-6 times application of SNS. Insufficient healing was observed in 16 (32.7%) cases. Time of discharges were 9.97 months (4-18) in Group 1 patients, whereas it was 16 months (6-36) in Group 2 (p=0.65).

20 (% 40) patients suffered from pain. In 2 cases this pain continued for three days. None of the cases discontinued application due to pain. In two cases abcesses occurred (% 4). These cases received drainage under local anesthasia and SNS application was continued after this pocess. The patients were grouped as mentioned above. Patients with serose discharges are still observed.

Patients via recurrences in 3, 5, and 7. months after the treatment received surgical procedures. Group 1 had 18 (36.7%) cases with complete healing and 15 cases (% 30.6) healed via serose discharge. There was 16 (32.7%) patients in Group 2.

Two months after healing patients were evaluated via MRI studies. Only 15 cases (% 45) out of 33 had radiological healing signs, whereas 18 (%55) had insufficient healing signs.

Discussion

This procedure is in favour of outpatient clinic examination and less complication rates due to traditional surgical management ¹⁰⁻¹⁴. There is still an ongoing search for ideal therapy for perianal fistulas. Recently, LIFT (ligation of intersphincteric fistula tract), LAFT (laser ablation of fistula tract), VAAFT (video assisted fistula treatment were presented as alternative methods for fistula therapy ¹⁴. Three major criteria for successful fistula tretment are as follows; control of infection, treatment of fistula and maintaining of continence ¹⁶. Success rate in fistula surgery range between 16-95% via sphincter saving procedures ¹⁷⁻¹⁸. These rate differs as % 60-90 by mucosal advancement flaps, 15-60% by fibrin glue application and % 45-90 by LIFT ¹⁸⁻¹⁹. Seton application is a simple method with a long duration as 3-9 months (120). Fibrin glue and collagens are biomaterials with low incontinance rates. Hovewer success rates are very low and requires general anesthasia.

1% SNS application is a non-invasive technique, initially utilized by Wafi et al. In our study we tried to enhance the concentration of silver nirate. Wafi et al reported success rates as 52% (9). 20% SNS was used by the first time in our clinic. In our study 33 (67%) patients received SNS for inter and transsphincteric fistulas reached sufficient healing rates. 13 cases (%26) were healed via two teratment cycle and 20 (%40) cases were healed via 3-6 treatment cycles. Mean healing duration was 16 weeks. By improving concentartion of silver nitrate we were able to enhance success rate from 52 to% 67%. Our clinically failure rate was 33%. To our knowledge, this present study is the second one, which evaluates efficacy of silver nitrate application in periana fistula patients.

SNS application does not require any anesthesia and cost effective. Additionally silver nitrate can fill all tracts in fistulas due to it's liquid form. According to questionaries patients are in favour of receiving this type of treatment. Applicability in outpatient clinics, short time of procedures, less surgical stress, less pain and discharge and finally short recovery period remain major advantages for SNS usage.

Patients who were evaluated as radiologically healed (45%) represents 2 recurrent cases, out of 3. Therefore we can conclude even in clinically healed cases without proof of radiology, recurrences mey present. Observation of these patients still continues.

Limitations of our study are; short follow-up times (8.84 months), low number of patients and lack of evaluation of tract measurement. We believe with improved number of patients and longer observation times, topical application of silver nitrate will reach optimal point.

Conclusion

In this prospective study, we reached healing rates as 67% with 20% SNS in perianal fistula patients. This is a non-invasive procedure and could be applied in out patient clinics, with low costs. Less complication rates enhances attraction. Patients will not loose chance of surgical treatment. Therefore, we believe SNS may be used as first line treatment in perianal fistulas. Future studies are required with more patients.

Riassunto

Vengono valutati i risultati del trattamento in 49 pazienti affetti da fistole perianali con l'applicazione locale di una soluzione di nitrato d'argento al 20%. Lo studio riguarda sia fistole intersfinteriche che transfinteriche trattate tra gennaio 2017 e dicembre 2017, invitando i pazienti per gli esami di controllo dopo una settimana dall'inizio del trattamento.

I pazienti con perduranti perdite continue dopo una singola dose singola di nitrato d'argento sono stati ripetutamente trattati con la soluzione altre sei volte ad intervalli di un mese. La scomparsa delle secrezioni è stata considerata come termine finalizzato dello studio.

I casi che dopo sei applicazioni continuavano a presentare delle perdite sono stati considerati di insufficiente guarigione.

I pazienti sono stati raggruppati in base allo stato di guarigione: Gruppo 1, pazienti guariti; Gruppo 2, pazienti non guariti. Sono stati registrati sesso, età, durata del follow-up, data di inizio della segnalazione di perdurante secrezione, numero di applicazioni del nitrato d'argento, tipo di fistola e frequenza delle perdite.

Su 49 pazienti studiati, 44 erano uomini (89,8%); età media 44,9 anni. 28 casi (57,1%) si trattava di fistole intersfinteriche, mentre 22 pazienti (42,9%) avevano fistole intersfinteriche. Il numero medio di applicazione del nitrato d'argento è risultato di 4.1.

I pazienti del Gruppo 1 hanno ricevuto in media 3,42 applicazioni (1-6), mentre casi nel Gruppo 2 il numero medio di applicazioni è stato 5,5. I pazienti sono stati controllati per circa 8,84 mesi (6-12).

La guarigione è stata ottenuta in 13 casi (% 26) in due tempi e in altri 20 casi (% 40) con applicazioni del nitrato d'argento da 3 a 6 volte.

Il tasso di guarigione completa con il trattamento con nitrato d'argento è stato ottenuto nel 67% dei casi. Si è trattato di una procedura non invasiva, applicabile in regime ambulatoriale a costi contenuti, e la situazione dell'incidenza di complicanze aumenta l'interesse del metodo. Inoltre i pazienti non perdono la possibilità di un trattamento chirurgico, e pertanto si ritiene che il nitrato d'argento possa essere usato come trattamento di prima linea nelle fistole perianali.

References

1. Parks AG: Pathogenesis and treatment of fistula-in-ano. Br Med J, 1961; 5224:463-69.

2. Corman ML: Anorectal abcess and anal fistula; colon and rectal surgery. IIIrd edition.

3. Poon CM, Ng DC, Ho-Yin MC, Li RS, Leong HT: *Recurrence pattern of fistula-in-ano in a Chinese population*. J Gastrointestin Liver Dis, 2008; 17(1):53-7. PMed:18392245.

4. Jacob TJ, Keighley MR, Perakath B: *Surgical intervention for chronic anorectal fistula*. Cochrane Database of Syst Rev, 2010; 12:CD006319.

5. Malik AI, Nelson RL: Surgical management of anal fistulae: A systematic review. Colorectal Dis, 2008; 10:420-30.

6. Rizzo JA, Naig AL, Johnson EK: *Anorectal abscess and fistulain ano: evidence-based management.* Surg Clin North Am, 2010; 90:45-68.

7. Ommer A, Herold A, Berg E, Fürst A, Sailer M, Schiedeck T: *German Society for General and Visceral Surgery: Cryptoglandular anal fistulas.* Dtsch Arztebl Int, 2011; 108:707-13.

8. van Koperen PJ, ten Kate FJ, Bemelman WA, Slors JF: *Histological identification of epithelium in perianal fistulae: A prospective study.* Colorectal Dis, 2010; 12:891-95.

9. Attaallah WL, Tuney D, Gulluoglu BM, Ugurlu MU, Gunal O, Yegen C: Should we consider topical silver nitrate irrigation as a definitive nonsurgical treatment for perianal fistula? Dis Colon Rectum, 2014; 57(7):882-87.

10. van der Hagen SJ, Baeten CG, Soeters PB, van Gemert WG: Long-term outcome following mucosal advancement flap for high perianal fistulas and fistulotomy for low perianal fistulas: Recurrent perianal fistulas: Failure of treatment or recurrent patient disease? Int J Colorectal Dis, 2006; 21:784-90.

11. Stelzner F, Dietl H, Hahne H: Results in radical surgery of 143 anal fistulas; criticism of one-stage sphincterotomy in one-stage or multiple-stage surgery of fistulas. Chirurg, 1956; 27:158-62.

12. García-Aguilar J, Belmonte C, Wong DW, Goldberg SM, Madoff RD: *Cutting seton versus two-stage seton fistulotomy in the surgical management of high anal fistula.* Br J Surg, 1998; 85:243-45.

13. Mylonakis E, Katsios C, Godevenos D, Nousias B, Kappas AM: *Quality of life of patients after surgical treatment of anal fistula; the role of anal manometry*. Colorectal Dis, 2001; 3:417-21.

14. Pasta V, Redler A, Amabile MI, Merola R, Monti M: *Personal technique for treatment of perianal fistulas in outpatients*. Ann Ital Chir, 2012; 83(3):269-72.

15. Sheikh P, Baakza A: *Management of Fistula-in-Ano-The Current Evidence*. Indian J Surg, 2014; 76:482-86.

16. Alasari S, Kim NK: Overview of anal fistula and systematic review of ligation of the intersphincteric fistula tract (LIFT). Tech Coloproctol, 2014; 18:13-22.

17. Yassin NA, Hammond TM, Lunniss PJ, Philips RK:. Ligation of the intersphincteric fistula tract in the management of anal fistula. A systematic review. Colorectal Disease, 2013; 15:527-35.

18. Mushaya C, Bartlett L, Schulze B, Ho YH: Ligation of intersphincteric fistula tract compared with advancement flap for complex anorectal fistulas requiring initial seton drainage. Am J Surg, 2012; 204:283-89.

19. Hong KD, Kang S, Kalaskar S, Wexner SD: Ligation of intersphincteric fistula tract (LIFT) to treat anal fistula: Systematic review and meta-analysis. Tech Coloproctol, 2014; 18:685-91.

20. Sirikurnpiboon S, Awapittaya B, Jivapaisarnpong P: Ligation of intersphincteric fistula tract and its modification: Results from treatment of complex fistula. World J Gastrointest Surg, 2013; 5:123-28.