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Original Research Article

Efficacy of Oxidized Regenerated Cellulose on Hemostasis and Wound Healing After Fistulotomy İn Patients Operated For Anorectal Fistula

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Abstract: Minimally invasive techniques have a significant important to reduce the pain and shorten postoperative period in the patients underwent fistulotomy due to anorectal fistula. In this study our aim was to evaluate the efficacy of oxidized regenerated cellulose on bleeding control instead of electrocautery which may lead mucosal oedema and pain postoperatively.Thirty-four patients with simple fistula-in-ano who underwent fistulotomy included this study. Fistula tract and primary opening was identified using a conventional fistula probe and/or hydrogen peroxide instillation and fistulotomy performed. After fistulotomy tracts were curated with blunt curette and irrigated with hydrogen peroxide. After curation, electrocautery has not used for bleeding, packing the tract with oxidized regenerated cellulose instead of electrocautery.Intraoperatively twenty-one patients had successful control of bleeding after initial packing. Four patient had successful control of bleeding after second packing and nine patients needed electrocauterisation for bleeding.Oxidized cellulose is a well known andwidely used surgical hemostat. It is available in manyforms. We think that oxidized regenerated cellulose can be considered as an effective alternative to electrocauterisation in patients underwent fistulotomy for anal fistula.

Keywords: Thirty-four patients with simple fistula-in-ano who underwent fistulotomy included this study.

INTRODUCTİON

Recently, alternative therapies have been employed in themanagement of cryptogenic anal fistula in an attempt torender the surgery more minimally invasive and to reducethe likelihood of post-operative faecal incontinence (Wilhelm, A. *et al.*, 2017). Minimally invasive techniques have a significant important to reduce the pain and shorten postoperative period. In this study our aim was to evaluate the efficacy of oxidized regenerated cellulose on bleeding control instead of electrocautery which may lead mucosal oedema and pain postoperatively.

PATİENTS AND METHODS

Thirty-four patients with simple fistula-in-ano who underwent fistulotomy included this study. All patients underwent flexible rectoscopy to classify the fistula type by identifying the primary and secondary openings. Examination under anesthesia perform when needed to identify the internal opening.

A probe (probe stille 1.5 mm/16cm, Nemsis Medical, Samsun/Turkey) has passed from external opening to internal one and diluted methylene blue, hydrogen peroxide, or both injected into the external opening to facilitate identification of the internal opening at the dentate line.

Fistulas classified as defined by American Society of Colon and Rectal Surgeons (ASCRS) (Steele, S.R. *et al.*, 2011) as having the following characteristics

- Includes a single, nonrecurrent tract that crosses less than 30% of the external sphincter
- Is not an anterior fistula in women
- Occurs in patients without impaired continence, a history of Crohn disease, or previous pelvic irradiation.

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These fistulae, which include intersphincteric and low transsphincteric fistulae, considered as simple fistulae and prepared for primary fistulotomy

The patients with complex anal fistulas, bleeding/wound healing disorders and serious systemic diseases excluded from the study.

All patients underwent mechanical bowel preparation the day before surgery, followed by 2 g of metronidazole by mouth the same evening. A broad-spectrum parenteral antibiotic was given to induce anesthesia. All procedures were performed under spinal anesthesia at a prone jackknife position.All operations were performed in the operating room. The primary and secondary fistula tract openings were identified. The fistula tract was then thoroughly cleaned with a blunt curette or gauze strip that was threaded through the tract. Fistula tract and primary opening was identified using a conventional fistula probe and/or hydrogen peroxide instillation and fistulotomy performed. After fistulotomy tracts were curated with blunt curette and irrigated with hydrogen peroxide. After curation, electrocautery has not used for bleeding, packing the tract with oxidized regenerated cellulose (Oxicel®Betatech Medical, Istanbul, Turkey) has applied and wait for 5 minutes. After 5 minutes if bleeding continues packed again and has wait for 5 minutes more. After initial packing, if bleeding continues electrocautery has used to maintain bleeding control. Results evaluated retrospectively.

RESULTS

Thirty-four patients were retrospectively studied during an eleven-month period. They were treated with fistulotomy (21 males, 13 females). All the patients had low anorectal fistula. Their age was 19-55 years (mean, 41 years).

Intraoperatively twenty-one patients had successful control of bleeding after initial packing. Four patient had successful control of bleeding after second packing and nine patients needed electrocauterisation for bleeding.

Granulation tissue of their fistula tracts completed after a 7-14 d follow-up, but 3 patients had successful closure of their fistula tracts after 30 d follow-up. The mean healing time was 21 d (range, 16-34). The mean operative time was 25 min (range, 10-30 min). All 34 patients with single fistula tracts had successful closure of their fistula tracts. The healing rate of simple anal fistula treatment group was 100% with fistulotomy. There was no change of the continence status in all patients. There was no major post operative complication.

DİSCUSSİON

Perianal fistulas remain a surgical treatment challenge incolorectal practice due to high recurrence rates and therisk of postoperative incontinence. This is indicated byseveral studies that report on incontinence, ranging from bleeding or soiling to major incontinence, up to 41 %. The most common treatment is represented by traditional fistulotomybecause this is simple and gives good results, especiallyfor low anal fistula. Fistulectomy is a valid alternativebut, even if it's more radical compared to traditionalfistulotomy, is less used because of some disadvantages:longer operating time, wider surgical wound, prolongedtime of healing and more than tripled incidence of incontinence to flatus. Many present findings demonstrated fistulotomy resulted in lesser pain,bleeding, shorter wound healing time and shorter duration of postoperative wound discharge in comparison to a fistulectomy(Xu, Y. *et al.*, 2016). In this study we perform fistulotomy for all patients with low anal fistula. And evaluate the efficicy of oxidized regenerated cellulose on bleeding control in patients with anorectal fistula. When methods such as compression, suture, and electrocautery are not effective or cannot be performed for hemostasis inprimary wound care, hemostatics can be helpful (Kang, B. S. *et al.*, 2012). Hemostaticscan be classified into two types; one type including cellulose,gelatin, and collagen acts as a physical structure within whichplatelets can aggregate and stops bleeding indirectly; anothertype, such as thrombin, acts directly on the last step of the coagulation pathway (Kang, B. S. *et al.*, 2012; Oz, M. C. *et al.*, 2003). These hemostatics prevent hemorrhage,decrease the use of systemic coagulants, help reducing surgicaltime, and contribute to a patient's quick recovery (Tomizawa, Y. 2005). In respect to wound healing effects of hemostatic agents Kang et.al (2012) has investigated the wound healing effect of two widely used hemostatics because the wound healing effect of hemostatics is controversial and making the choice of which hemostatic to use is difficult. The hemostatics used in the study were Surgicel (In our study Oxicel used equivalent of Surgicel) composed of cellulose and Spongostan composed of gelatin. They suggested that when compared the wound healing effect of cellulose andgelatin, agents known to be effective in bleeding control, withthe control group by applying each of them to mice with muscledefects. The results showed that gelatin, compared to cellulose,greatly delayed the wound healing. Therefore, when hemostatics are needed, cellulose, instead of gelatin, is recommended,considering its effects on wound healing(4). Moreover, there is a report of theantibiotic effect after the use of Surgicel in vivo, and growth ofantibiotic resistant strains were also found to be effectively suppressed (Kang, B. S. *et al.*, 2012; Dineen P. 1977; Spangler, D. *et al.*, 2003). As we used Oxicel on curated fistulotomy tract we have not observed any delay on wound healing and found very effective on bleeding control.

Oxidized cellulose is a well known andwidely used surgical hemostat. It is available in many forms(Spotnitz, W.D., & Burks, S.G. 2010; Frantz, V.K., & Lattes, R. 1945; & Pierce, A. M. *et al.,* 1984). We think that oxidized regenerated cellulose can be considered as an effective alternative to electrocauterisation in patients underwent fistulotomy for anal fistula.

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