**Early re-suturing of dehisced obstetric perineal wounds: A 13-year experience**

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**Abstract:**

**Objectives:** To describe post-operative outcomes following early re-suturing of obstetric perineal wound dehiscence.

**Study Design:** This was a retrospective series of 72 women who underwent re- suturing of a dehisced perineal wound at a tertiary urogynaecology department during a 13-year period (December 2006 - December 2019).

**Results:**

Seventy-two women with complete perineal wound dehiscence opted for secondary re-suturing. Other accompanying symptoms included purulent discharge from the wound (22.2 %), perineal pain (23.6%) and both purulent discharge and pain (26.4%). The median time taken for the wound to heal completely following re-suturing was 28 days (IQR 14.0-52.0); 49.2% had healed completely by four weeks, 63.5% by six weeks and 76.2% by eight weeks. Themedian number of out-patient follow-up appointments required was 2 (IQR 1.0-3.0). No post-operative complications were experienced in 63.6% of women, one complication occurred in 25.8% and two complications in 10.6%. Complications included skin dehiscence (33.3%), granuloma (33.3%), scar tissue (17.6%), perineal pain (5.9%) and sinus formation (5.9%). Of the women who developed two complications, four developed skin dehiscence with granulation tissue and one had skin sinus formation. One developed granulation tissue with perineal pain. All complications were managed conservatively in an outpatient setting or surgically under local anaesthetic, without further complication. There was no significant difference (p=0.443) in complication rates between the group (n= 10) with dehisced wounds with signs of wound infection (purulent discharge or the presence of both purulent discharge and pain) pre-operatively versus the group (n=14) without signs of infection.

**Conclusions:** This study demonstrates the positive outcomes of early re-suturing of perineal wound dehiscence with faster healing, reduced follow-up requirements and few major complications. It provides information to clinicians who are uncertain about the effects of early re-suturing of perineal wounds which can be used to help counsel mothers with wound dehiscence on their management options.

**Keywords:**

Childbirth related perineal trauma; Wound dehiscence; Perineal wound infection; Re-suturing of perineal wounds

**Main text:**

1. **Introduction:**

Perineal injury following childbirth can result in complications such as wound infection and dehiscence (1). These are associated with significant peripartum morbidity and prolonged post-natal recovery (2,3). Perineal wound dehiscence usually occurs in the first 7-14 days following delivery and is commonly associated with infection (2,3). However, the true prevalence of the two complications is unknown, with the reported incidence of wound dehiscence and infection ranging between 0.1% - 23.6% and 0.2% -24.6% respectively (4).

Early re-suturing has been defined as the repair of a dehisced perineal wound within 14 days after vaginal delivery (5). This management is currently offered by some clinicians. Traditionally, the popular approach was to delay re-suturing of dehisced perineal wounds (up to three months) to allow for tissue re-vascularisation and resolution of infection and inflammation (5–8). However, it is postulated that the current condition of the tissues is most important for a successful secondary repair, irrespective of the time to repair interval (9). At present, there is no agreed best practice recommendation for the management of perineal wound dehiscence due to a lack of robust evidence comparing expectant management (healing by secondary intention with antibiotic cover) and early re-suturing (10). Published data to date is limited, reporting outcomes in a small number of participants (6,7,11–14). These studies support early re-suturing; reporting post-operative success rates (complete wound closure with no complication) in over 90% (6,12), earlier resumption of sexual intercourse (14) and a trend toward shorter healing times in comparison to wounds managed expectantly (13). Significant complications such as complete wound dehiscence, infection and recto-vaginal fistula occurred solely in women with risk factors such as obstetric anal sphincter injury (OASI), chronic disease and those taking immunosuppressive therapy (6,11,12). A pilot study designed to demonstrate feasibility, showed significant differences in healing times and maternal satisfaction, favouring re-suturing. However, given the small sample size and nature of the study, these results should be interpreted with caution; only 26% of the potentially eligible women were recruited as most women opted for re-suturing rather than participating in the randomised controlled trial (RCT). This small sample size may offer an imprecise treatment effect size and so undermine the reliability of its results (15). Despite this, there is wide variation in practice with regard to perineal wound dehiscence management. In the UK, expectant management is generally advised, however perineal wound dehiscence can take up to 16 weeks to heal when managed expectantly and during this time the patient will require regular review (3,16). Thereby resulting in a longer period of maternal morbidity (10,16). Therefore, some clinicians recommend that early re-suturing should be attempted following the exclusion or treatment of concurrent infection (6,7,12,16).

The aim of this study was to describe post-operative outcomes following early re-suturing of perineal wound dehiscence.

1. **Materials and Methods:**

This was a retrospective series of 72 women who underwent re- suturing of a dehisced perineal wound at a tertiary urogynaecology department during a 13-year period (December 2006 - December 2019).

All women with perineal wound dehiscence were reviewed in a dedicated perineal clinic either by a specialist midwife, urogynaecology registrar or consultant. Dehiscence was defined as separation of both the perineal skin and muscle layer. Appropriate counselling on management options, including conservative (healing by secondary intention) or surgical (re-suturing), were given. The women were made aware of the lack of evidence of one method of management being superior to the other.

Women who opted for conservative management were given oral antibiotics, perineal hygiene advice and offered a further follow-up in 2-3 weeks with a contact telephone number if any additional concerns were to arise, for example, symptoms of infection. Those who consented to surgical management were re-admitted into hospital and placed onto an emergency operating list to be performed by the Urogynaecology consultant or registrar. If there was any evidence of wound infection then the patient was admitted for intravenous antibiotics and regular wound irrigation, with a plan for re-suturing once the wound was deemed clean.

*2.1 Surgical technique*

All secondary wound closures were performed using a standard surgical procedure protocol under general anaesthetic. The featured video demonstrates the surgical steps necessary to re-suturing a dehisced obstetric perineal wound (Supplementary content).

In the lithotomy position, the perineal area and vagina were cleansed using an aseptic technique with a sterile swab saturated with povidone-iodine antiseptic solution (or chlorhexidine gluconate 4% for women with iodine sensitivity). Sterile drapes were then applied. A per rectal examination was performed to confirm sphincter integrity and all old sutures were removed and discarded. The perineal wound was irrigated with a 50:50 dilution of 3% hydrogen peroxide and 0.9% sodium chloride and debrided using a brush and curette. Once fresh tissue with bleeding points were exposed, the margins of the broken-down perineal and vaginal skin were excised.

Perineal repair was completed in three layers after checking alignment and apposition of the perineal skin. Initially the vaginal mucosa was closed with a continuous, non-locking suture using 2-0 Vicryl (polydiaxone) suture material from the vaginal apex to the hymenal remnants. Following this, the perineal muscles were dissected away from the skin as necessary to release tension and then sutured continuously in one or two layers with 1-0 Vicryl, closing all the dead space. Skin closure was then completed with interrupted 2-0 Vicryl mattress sutures (Figure 1).

Vaginal and per rectal examinations were performed at the end of the procedure, ensuring that the vaginal introitus admitted at least two fingerbreadths and that no sutures had penetrated the rectal mucosa.

All women were discharged the same day and followed-up in the perineal clinic one week after the procedure and discharged from outpatient clinic once the wound was deemed to have healed and symptoms resolved.

*2.2 Statistical Analysis:*

The data was analysed using SPSS version 26.0.0.0. Descriptive analysis of the electronic patient records data was undertaken. Nominal data is presented as number (N) and percent. For continuous data, the median and interquartile range (IQR) were calculated. The relationship between categorical variables was assessed using the Fisher’s Exact Test. A *p*-value <0.05 was considered statistically significant.

1. **Results:**

During the study period (December 2006- December 2019), 72 women underwent re-suturing following complete dehiscence of their perineal wound. Most women were primiparous and the median age was 29 years (IQR 25-33). The majority of wounds that were re-sutured were episiotomies (59.7%). Four women had a history of OASI. These women had dehiscence of the perineal muscle layer, but on examination their primary anal sphincter repair remained intact. No woman who had a perineal wound infection developed an extension and disruption of an intact anal sphincter. Further patient characteristics and relevant delivery details of those who underwent re-suturing are described in Table 1 and 2.

Of the 72 women with perineal wound dehiscence, other accompanying symptoms included purulent discharge from the wound (22.2 %), perineal pain (23.6%) and both purulent discharge and pain (26.4%). Diagnosis of infection was based on the presence of purulent discharge or the presence of both purulent discharge and pain (n=33). The median time from delivery to re-suturing was 11 days (IQR 9-14) andnumber of out-patient follow -up appointments was 2 (IQR 1-3). Nine women were lost to follow-up, of these, six did not attend any follow-up appointments. The wound completely healed at a median of 28 days (IQR 14-52). By four weeks, 49.2% of wounds had healed completely, by six weeks 63.5% and by eight weeks 76.2% had healed (Table 3).

Forty-two women (63.6%) experienced no post-operative complications. One complication was experienced in 17(25.8%) and two complications in 7(10.6%). In those experiencing one complication, this included skin dehiscence (33.3%), granuloma (33.3%), scar tissue (17.6%), perineal pain (5.9%) and sinus formation (5.9%). In those with two complications, four developed skin dehiscence and granulation tissue, one developed skin dehiscence and sinus formation and in one had granulation tissue and perineal pain. Additionally, one woman, concurrently being treated for tuberculosis, formed an inter-sphincteric collection with intact external and internal anal sphincters on endoanal ultrasound (Table 4). There was no significant difference (p=0.443) in complication rates between the group (n= 10) with dehisced wounds and signs of wound infection (purulent discharge or the presence of both purulent discharge and pain) pre-operatively versus the group (n=14) without signs of infection. All complications were managed conservatively in an outpatient setting or surgically under local anaesthetic without further complication.

**Discussion:**

The aim of this study was to present the post-operative outcomes of women undergoing secondary re-suturing of a dehisced perineal wound following review in a dedicated perineal clinic. To the best of our knowledge, based on a literature search, this is the largest study describing outcomes following early re-suturing of perineal wound dehiscence.

Wound dehiscence is often described to occur concomitantly with infection (16,17). In the retrospective analysis of outcomes following re-suturing of dehisced perineal tears by Ramin et al (12) 79% of wounds also exhibited signs of infection. It is therefore not surprising that the common additional presenting complaints in our patients were purulent wound discharge and perineal pain. Also, we found that, majority of re-sutured wounds occurred following an episiotomy (59.7%). This concurs with a recent study showing that episiotomy is associated with an approximately two-fold increase in wound infection and a three-fold increase in wound dehiscence (18).

The average time taken from delivery to wound dehiscence presentation is reported to be between five to six days and the average time taken from wound dehiscence presentation to re-suturing is three to seven days (7,12). In our study, the median time from initial repair to re-suturing was 11 days. Re-suturing of perineal wound dehiscence in the immediate puerperium has been described to decrease maternal morbidity by improving sexual function and minimising the risk of cloacal-like defect formation. Additionally, early re-suturing may potentially reduce the need for future major perineal revision procedures, longer hospital inpatient stay, and litigation; overall, reducing the economic burden to the health service (8). The median time taken for the re-sutured perineal wound to heal completely in our study was 28 days and 76.2% of women had a completely healed wound within eight weeks. It is reported that dehisced perineal wounds managed surgically are 20-times more likely to heal within four weeks, in comparison to those managed expectantly (15). Also, another small RCT of infected episiotomies showed that women who underwent re-suturing experienced shorter healing times than those managed expectantly (13).

In terms of complications following re-suturing, there was no difference in complication rates in wounds with signs of wound infection in comparison to those with no signs. This is likely attributed to the pre-operative preparation of infected wounds including intravenous antibiotics and regular wound irrigation until the wound objectively appeared clean. Skin dehiscence was the most common complication, occurring in 19.7% of women. This was managed conservatively and healing was by secondary intention. Rates in the literature concur with this and are reported to range between 14.3%-21.7% (6,7,11). Granuloma formation was another commonly experienced complication and was managed with silver nitrate. Other complications such as scar tissue formation, required surgical division under local anaesthetic, and the formation of small uncomplicated sinuses did not require surgical treatment. Perineal pain resolved with the use of 5% topical lidocaine hydrochloride ointment and in the woman who formed an inter-sphincteric collection, her diagnosis of tuberculosis may have been a factor contributing to her poor wound healing due to the chronic systemic inflammatory state associated with *Mycobacterium Tuberculosis* (19). As she did not develop an abscess, she was managed conservatively. Overall however, the post-surgical complication rate was low. To date, no study has reported these other early post-surgical complications and their management. Analysis of these additional complications following re-suturing is relevant as they can prolong the healing process, thereby increasing the number of outpatient appointments, potentially influencing the woman’s management decision.

The limitations in this study include the relatively small sample size and the retrospective design which may introduce bias. However, given that this is not a common condition, 72 is a sizeable number. This study will be of interest to clinicians who are uncertain about the effects of early re-suturing of perineal wounds. We acknowledge that 91.7% returned for follow-up. We do not have long term outcomes such as sexual dysfunction as our cohort were discharged once the wound had healed. Therefore, outcomes such a resumption of sexual intercourse and dyspareunia at three to six months were not addressed (10). Another limitation is that, this study describes outcomes of those women who underwent early secondary repair of the perineum and therefore comparison to women who were managed expectantly cannot be made. We do not have outcomes such as healing time and complications in those perineal wounds managed expectantly in our unit. However, it is possible that clinicians and patients were more likely to opt for healing by secondary intention for lesser degrees of dehiscence and re-suturing preferred for those with a large dehiscence as they were perceived to take much longer to heal with associated pain. Ideally a prospective, multi-centre study comparing re-suturing with healing by secondary intention is required. This would allow full evaluation of the treatment effects of both management options. When such an RCT was previously performed by Dudley et al (15) it faced challenges in terms of recruitment due to patient and clinician treatment preferences, with a small number of potentially eligible women being recruited. Nevertheless, this study showed a significant improvement in wound healing at 2 weeks and better patient satisfaction at three months following perineal re-suturing. Due to the small sample size of this pilot study, reliable conclusions cannot be drawn. It is unlikely that a definitive study will ever be completed due to the nature of a complete perineal wound dehiscence whereby women and clinicians will be more likely to favour re-suturing as opposed to expectant management. A nested qualitative study from this RCT showed women with complete wound dehiscence who were managed expectantly were more likely to feel in the long-term that their perineum has not returned to “normal” (3). In the same study, women managed expectantly expressed they would have preferred surgical treatment. One reason given was the extended healing process they faced. By contrast, the reported experiences of women undergoing perineal re-suturing were very positive (3).

As the perineum is in close proximity to the anorectum, techniques to minimise infection risk and hence dehiscence also need to be explored. The prophylactic antibiotics in the prevention of infection after operative vaginal delivery (ANODE) RCT showed that prophylactic administration of a broad-spectrum antibiotic following an instrumental delivery significantly reduced the risk of superficial perineal infection by 47% and deep infection by 54%. Also, the risk of perineal wound dehiscence and perineal pain was significantly reduced at six weeks post-partum by 48% and 16% respectively (20). Another recent RCT, has shown that the use of 3% copper impregnated sanitary towels in women with perineal trauma following vaginal delivery reduced the rate of superficial perineal wound infection by 77.8% and deep infection by 85.3% (21).

1. **Conclusion:**

In the absence of an adequately powered RCT, we feel that this study demonstrates the positive outcome of early re-suturing of perineal wound dehiscence, due to a potentially shorter healing time in comparison to healing by secondary intention. There were few minor complications with three patients requiring surgical management under local anaesthetic. Although re-suturing may require inpatient admission in some patients with large wounds for antibiotic administration, it allows for earlier discharge from outpatient services in comparison to expectant management, which requires regular outpatient monitoring throughout a potentially much longer healing process. Therefore, early re-suturing could reduce a source of economic burden to the NHS. This data could be used by clinicians to counsel mothers who develop wound dehiscence after childbirth regarding outcomes following early re-suturing of the wound.

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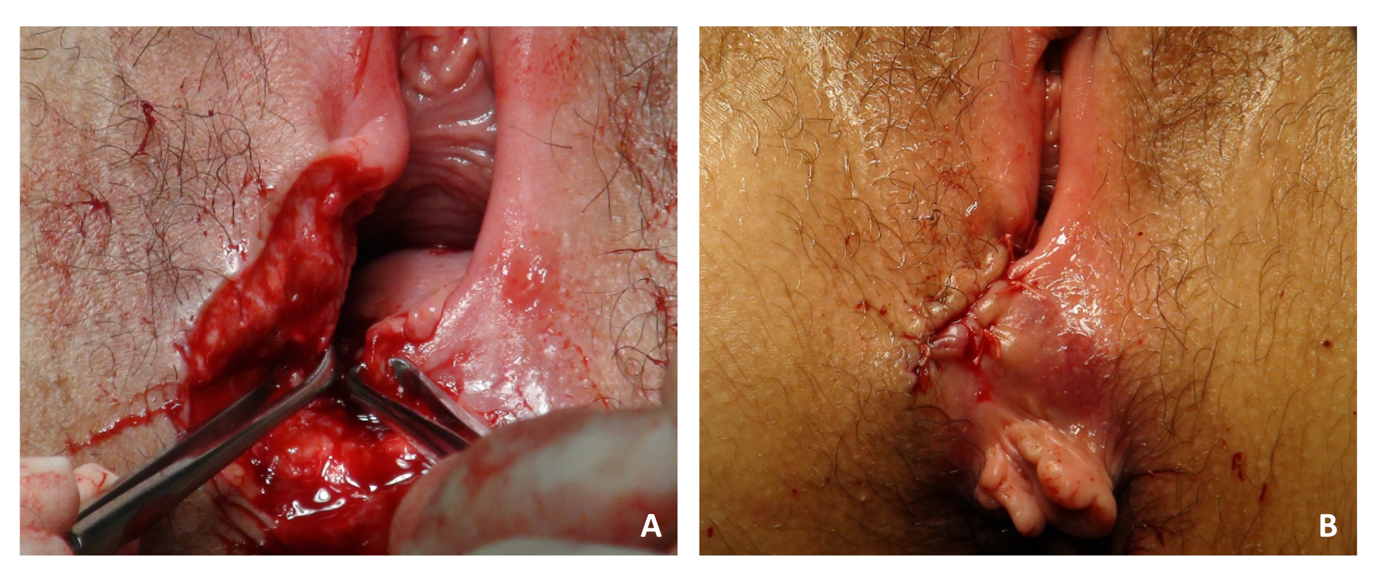
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**Figure Legend:**

**Figure 1.** Images showing dehiscence following an episiotomy repair **(A)** The wound edges of the broken-down perineal skin have been excised. Allis forceps are being used to grasp the vaginal skin to check anatomical apposition and alignment. **(B)** The perineum after interrupted mattress sutures were inserted for skin closure ensuring the wound is not under tension as swelling may occur post-operatively.

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**Table 1: Patient characteristics**

|  |  |
| --- | --- |
| N=72 | **Median (IQR)** |
| Age (years) | 29(25-33) |
| BMI (kg/m2) | 24.2(21.6-25.9) |
| **Ethnicity** | **N (%)** |
| *White British* | 35(48.6) |
| *Asian Indian/Pakistani/other Asian Background* | 21(29.2) |
| *Black African/Caribbean* | 6(8.3) |
| *Any other Ethnic group* | 6(8.3) |
| *Unknown* | 4(5.6) |

BMI- Body Mass Index

**Table 2: Delivery Details**

|  |  |
| --- | --- |
| **N=72**  **Parity** | **N (%)** |
| *1* | 59(81.9) |
| *2* | 9(12.5) |
| *>2* | 1(1.4) |
| Unknown | 3(4.2) |
| **Mode of delivery** |  |
| *SVD* | 24(33.3) |
| *Forceps* | 15(20.8) |
| *Ventouse* | 19(26.4) |
| *Ventouse + Forceps* | 7(9.7) |
| *Vaginal Breech* | 1(1.4) |
| *Unknown* | 6(8.3) |
| **Episiotomy** |  |
| *Yes* | 62(86.1) |
| *No* | 9(12.5) |
| *Unknown* | 1(1.4) |
| **Perineal trauma type** |  |
| *Episiotomy only* | 43(59.7) |
| *Second degree tear* | 24(33.3) |
| *OASI\** |  |
| *3a* | 0(0) |
| *3b* | 3(4.2) |
| *3c* | 1(1.4) |
| *4th* | 0(0) |
| *Unknown* | 1(1.4) |

BMI- Body Mass Index

SVD- Spontaneous Vaginal Delivery

OASI- Obstetric Anal Sphincter Injury

\*These women had wound breakdown of their perineal trauma, however on examination their primary anal sphincter repair remained intact

**Table 3: Time taken for wound to heal following re-suturing**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **N=63\*** | **4 weeks** | **6 weeks** | **8 weeks** | **>8 weeks** |
| Time to Healing  N (%) | 31(49.2) | 40(63.5) | 48(76.2) | 63(100) |

\*Nine women did not attend all of their follow up appointments until the wound had healed and so were removed from analysis

**Table 4: Wound healing outcomes following re-suturing**

|  |  |
| --- | --- |
|  | **Median (IQR)** |
| Time from delivery to re-suturing (days) N= 72 | 11(9.0-14.0) |
| Number of follow up appointments N=66\* | 2(1.0-3.0) |
| Time from re-suturing to wound healed (days) N=63\*\* | 28(14.0-52.0) |
| **Complications N=66\*** | **N (%)** |
| **No complications** | **42(63.6)** |
| **One complication N=17** | **17(25.8)** |
| *Skin dehiscence* | *6(33.3)* |
| *Granulation tissue* | *6(33.3)* |
| Posterior fourchette scar/adhesions | *3(17.6)* |
| *Sinus* | *1(5.9)* |
| *Perineal pain* | *1(5.9)* |
| **Two complications N=7** | **7(10.6)** |
| *Skin dehiscence + granulation tissue* | *4(57.1)* |
| *Skin dehiscence + sinus* | *1(14.3)* |
| *Skin dehiscence + wound infection/collection* | *1(14.3)* |
| *Granulation tissue + perineal pain* | *1(14.3)* |

\* Six women did not attend any follow up appointments and so were removed from analysis

\*\*Nine women did not attend all of their follow up appointments until the wound had healed and so were removed from analysis