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Caesarean wound care for midwives

Having investigated the risk factors for surgical site infections, **Margaret Murphy** makes recommendations for midwives to help keep women safe



SUMMARY With a rise in caesarean births there is a rise in wound care management issues for midwives and the potential for surgical site infections (SSIs). The burden of SSIs include increases in maternal mortality, morbidity, length of hospital stay and cost. Sepsis is currently the leading cause of maternal mortality, with 50 per cent of the women who die having had a caesarean birth (Centre for Maternal and Child Enquiries (CMACE) 2011). Wound management and the prevention of sepsis are therefore issues of great concern to midwives. This article considers the incidence of wound infections and presents the guidance available to help address this problem.

Keywords Wound infection, caesarean, surgical site infection, guidance

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Incidence

The Health Protection Agency (HPA) in the UK cite the most frequent healthcare-associated infections (HCAIs) detected, as being respiratory tract, urinary tract and surgical site infections (HPA 2012). Surgical site infections (SSIs) were third overall and accounted for 15.7 per cent of all HCAIs. According to Public Health England (PHE) (2013), rates in England are as diverse as 15.4-34.9 per cent, depending where a woman gives birth. However Leaper et al (2013) would caution that there is non-standardisation of definitions and reporting practices in the UK and Ireland which needs to be addressed to obtain a truly accurate picture of SSIs following caesarean (CS) birth. Wilson et al (2013), in their study of 4,107 women across 14 hospital sites, found a SSI rate of 404 (10 per cent). Women are more likely to develop SSIs if they laboured prior to the CS birth (Allen et al 2003).

Independent risk factors for an early wound infection are: obesity, multiple pregnancy, diabetes, hypertension, premature rupture of membranes and emergency CS birth

Risk and compounding factors

Independent risk factors for an early wound infection are: obesity, multiple pregnancy, diabetes, hypertension, premature rupture of membranes and emergency CS birth (Schneid-Kofman et al 2005). Ward et al (2008) identified five risk factors for SSI: body mass index, age, blood loss, method of wound closure and emergency procedures. The main causative organisms for SSIs are Staphylococcus aureus (30 per cent), Coagulase-negative staphylococci (13.7 per cent) and Enterococcus spp (11.2 per cent) (Hidron et al 2008).

Prevention of surgical site infections

Current research recommends the use of prophylactic antibiotic before CS birth, closure of subcutaneous space

greater than two centimetres and maintaining normothermia intraoperatively to help reduce the incidence of postoperative wound complications (Tipton et al 2011). In relation to midwifery care, the National Institute for Health and Care Excellence (NICE) (2012: 8-9) recommend the following for routine CS wound care:

- removing the dressing 24 hours after the CS
- specific monitoring for fever
- assessing the wound for signs of infection (such as increasing pain, redness or discharge), separation or dehiscence
- encouraging the woman to wear loose, comfortable clothes and cotton underwear
- gently cleaning and drying the wound daily
- if needed, planning the removal of sutures or clips

Of paramount importance is the timely recognition and treatment of sepsis in women

In addition, the key recommendations from the surgical infection guideline with particular relevance to post CS wounds include:

- women should be offered clear, consistent information and advice about the risks of surgical site infections;
- the skin should be prepared at the surgical site immediately before incision, using an antiseptic (aqueous or alcohol-based) preparation such as povidone-iodine or chlorhexidine;
- hair removal should not be routinely used, to reduce the risk of surgical site infection. If required, single-use head electric clippers (not razors) should be used on the day of surgery. Surgical incisions anticipated to heal by primary intention should be covered with a film membrane, with or without a central absorbent pad (NICE 2008).

Contributing factors for SSIs following caesarean birth are outlined in *Figure 1*.

Of paramount importance to this is the timely recognition and treatment of sepsis in women (CMACE 2011). Other causes of pyrexia (mastitis, urinary tract infection or upper respiratory tract infection) need to be investigated and excluded (Tharpe 2008). Strict adherence to hand hygiene needs to be used by both women and healthcare staff (CMACE 2011).

Approaches are needed to prevent, or decrease, the risk of SSIs following caesarean birth involving this multidisciplinary team (see *Figure 2*, over page). All women who experience a caesarean birth should have post-discharge surveillance from a multidisciplinary team (Ward et al 2008).

Figure 1 **Contributing factors for SSIs following caesarean birth**

Pre-existing maternal conditions	Events during labour or birth	Procedure/provider related conditions and events
Extremes of maternal age	Pre-term labour and birth	Pre-operative shaving
Elevated body mass index	Prolonged rupture of membranes	Pre-operative skin preparation technique
Smoking	Prolonged labour	General anaesthesia
Primiparity	Intrapartum fever/pyrexia	Hypothermia
Low socioeconomic status	Multiple vaginal examinations	Poor aseptic technique
Poor maternal hygiene	Post-term pregnancy	Inadequate sterilisation of instruments
Poor nutrition	Thick meconium staining	Delayed or omitted prophylactic antibiotics
Poor oxygenation	Internal fetal scalp electrode	Suboptimal haemostasis
Poor tissue perfusion	Uterine monitoring with an intrauterine pressure catheter	Practitioner skill
Multiple comorbidities	Operative vaginal birth	Practitioner experience
Diabetes	Foley catheter	Length of procedure
Hypertension	Caesarean birth	Operative trauma
Immune compromise	Uterine perforation	Contamination of wound or surgical site
Splenectomy	Manual removal of placenta	Residual dead space following wound closure
Severe anaemia	Retained products of conception	
Infection: Bacterial vaginosis,chlamydia, gonorrhoea, trichomoniasis		

(Andrews et al 2003; Smaill and Hofmeyr 2002; Smaill and Gyte 2010; Mangram et al 1999; Maharaj 2007a; Maharaj 2007b)

Conclusion

Midwives must be competent in assessing, recognising and caring for women who experience CS birth and who are at risk of developing a surgical site infection. The most recent confidential inquiry (CMACE 2011) has identified the need for midwives to address sepsis prevention and management as a matter of urgency.

TPM

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Midwives must be competent in assessing, recognising and caring for women who experience CS birth and who are at risk of developing a surgical site infection

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Figure 2 **Team approaches to minimising infection**

Postpartum and postoperative infections: preventive measures		
Maternal care	**Recommended practices**	**Surgical technique**
Screen and treat pre-existing genital tract infection	Minimise activity in the procedure room	Maintain excellent surgical or delivery technique
Screen and treat medical conditions, particularly those leading to vasoconstriction	Wear clean scrubs and personal protective equipment	Limit blood loss, maintain haemostasis
Pre-procedure antiseptic shower	Perform recommended surgical/delivery scrub	Ensure rigorous adherence to aseptic technique
Minimise number of vaginal examinations in labour	Provide sterile drapes between woman and potential source of infection	Minimise tissue trauma; limit use of ties and cautery
Avoid hair removal or use clippers shortly before procedure	Provide supplemental oxygen during and post procedure	Remove or debride devitalised tissue
Provide adequate skin preparation, use occlusive incise drape	Pre- and intra-operative warming	Eliminate dead space during closures
Provide antibiotic prophylaxis as appropriate	Correct volume deficits	Use monofilament suture where possible
Maintain perineal integrity	Maintain normoglycaemia	Elevate partial pressure of oxygen (PaO2)
Encourage adequate vitamin C, vitamin A, zinc and omega-3 fatty acid intake	Provide adequate pain control	Replace fluid losses to maintain peripheral circulation

(Mangram et al 1999; Greif et al 2000; Melling et al 2001; Ueno et al 2006; Maharaj 2007a; Tharpe 2008)

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