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PHYSIOLOGICAL CHANGES DURING POSTOPERATIVE REHABILITATION IN WOMEN WHO UNDERWENT CESAREAN SECTION

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Abstract: Management of post-cesarean infections is considered the responsibility of secondary care, but because most women are discharged within a day or two, hospital-acquired infections are rare. Therefore, the provision of assistance falls on the shoulders of community services. It is important that NHS trusts, clinical commissioning groups (CCGs) and health committees agree on a common approach to care that optimizes patient care and minimizes administrative and financial burden.
Cesarean section (CS) is probably the most common major surgery performed on women in the world. 1 The proportion of births with CS in England has increased significantly over the past 30 years, from 9% in 1980 to 25.5% in 2012/13. 2,3 There are many possible ways to perform surgery, and operative techniques vary depending on many factors, including the clinical situation and the preference of the operating surgeon. 1 Surgical site infection and suture dehiscence are among the potential complications of CS, and although most wound infections associated with CS are superficial, given the large number of women undergoing this procedure, they represent a health will be a big load on the storage system.
Key words: Cesarean section, operation, natural childbirth, step-by-step rehabilitation

The symposium discussion was prompted by the results of a prospective Health Protection Agency (HPA) study of 4,107 women undergoing CS at 14 NHS hospitals in England. The study found a 30-day surgical site infection rate of 9.6% (area 1). 2 Some independent risk factors were identified, but the strongest association was with increased body mass index (BMI; Figure 1). The frequency of infection in obese women was about 20%. However, long-term experience shows that the risk of infection increases with many other factors, such as emergency cesarean section and prolongation of the second stage of labor.

The discrepancy between published data and the opinions of health care professionals raises questions about the factors that contribute to the development of infection after CS and the impact of current clinical practice on risk. Almost all infections in the HPA study were diagnosed after the patient was discharged from the hospital. This increases the likelihood that surgeons will underestimate the extent of the problem and fail to recognize potential causes. On the other hand, care outside the hospital may not be optimal.

The UK National Institute for Health and Care Excellence (NICE) guidelines for caesarean sections include recommendations for all women undergoing caesarean section, without specific guidelines for the management of obese women. 4 Given that obstetric practice is highly individualized and surgeon preference may be a major determinant in the choice of surgical techniques and materials for CS, it is important to raise awareness of factors that increase the risk of infection.

Surgeons may be surprised by the high rate of CS-related infections in overweight and obese patients.

Because hospital stays usually last a day or two and most infections occur after the patient is discharged from the hospital, surgeons do not receive feedback from patients about postoperative care. They may think that infections that occur outside the hospital are not serious, but this is not always the case.

The advisory board noted a lack of experience in wound care in community settings. With the advent of direct entry into the midwifery profession, some junior midwives do not have the trauma care experience their older colleagues receive through general nursing training. If the risk of infection in a small group of women exceeds 20%, this is not reasonable.

Reduction of infections after CS in women with BMI ≥35

Mr Sean Barn (Consultant Obstetrician, Wrightington, Waigan and Laigh NHS Foundation Trust) described and assessed measures to reduce the risk of infection after caesarean section. 5 A review within the Trust found that the overall rate of infection after caesarean section was 12%. 6 However, infections led to 3–4 readmissions per month in women with a BMI > 35. The average duration of each readmission was three days and the average direct cost per clinical event was £1,050.

A multidisciplinary review of the patient's overall pathway revealed no significant deviations from recommended procedures, but staff and patients lacked knowledge of wound care and the majority of infections occurred after discharge. it became clear. A review of wound care procedures showed that dressings were removed after one day, which is in line with NICE guidance on CS, 4 but that the wound should be covered with an appropriate dressing for 48 hours. contrary to generally accepted good clinical practice. 7

After examination, OPSITE◊ Post-Op Visible (Smith & Nephew) was used for uncomplicated cases with a low risk of infection (eg, BMI<35) and left in place for at least seven days. 6 Earlier dressings were changed for wounds with excessive exudate levels. This dressing was chosen because it is soft and comfortable and provides good visibility of the surgical suture.

Nurses monitoring tissue viability and infection control also chose negative pressure wound therapy (NPWT) to evaluate obese women undergoing CS surgery. 6 NPWT has been shown to reduce infection rates and length of hospital stay in orthopedic surgery and has been used successfully in overweight and obese patients. 8,9 Premature dressing removal may delay the reepithelialization process, so it is agreed that the dressing should remain in place for seven days.

For obese women, the PICO◊ device (Smith & Nephew) was chosen as the postoperative dressing (Figure 2). This containerless, disposable NPWT system is an innovative dressing. Clinical experience has shown that it has good adhesion in obese women. Implementation includes:

Staff were instructed in wound assessment, recognition of infection, and proper smear performance.
Patients were given written information to identify infection and provide instructions on how to proceed. They were advised to wear underwear that would not rub against the bandage.
Patients were followed for up to 30 days by telephone contacts and home visits.
Surgical site infection was defined as two clinical signs confirmed by a positive smear test.
Later, from February 2012 to January 2014, in Wrightington, the National Health System Charitable Foundation. Waigan and Ley performed 1289 cesarean sections, including 206 women with a BMI ≥35, of whom 79 had a BMI ≥40 (these data were presented in the 23rd May 2014 Obstetrics and Gynecology based on a previous analysis of 138 patients presented at the congress)).

Preoperative assessment of risk factors such as maternal age greater than 45, obesity, and previous CS predicts subsequent treatment and helps provide patient-specific information related to CS.
Risk factors for labor include prolonged periods without water, body temperature >38°C, chorioamnionitis, and prolonged second stage of labor.
Postoperative factors included hemoglobin level <8 g/dL and duration of surgery >60 minutes.
The HPA study found no clear evidence that these traditional risk factors are actually important. The only significant factor in the development of infection was obesity. 2 The Advisory Board felt that all women with CS should be evaluated and treated in the same way to prevent infection, but obesity may require special measures. It remains unclear why obesity poses a particular risk. It should be noted that the risk increases with increasing BMI.

Obesity is a significant risk factor for infection after cesarean section 2
HPA examination revealed predominantly skin and faecal microorganisms in the wound, suggesting that they had entered the wound through the skin, and the delayed onset of infection relative to the date of surgery points to wound hygiene as an area of concern. 2 In obese women, the pannus creates a moist, warm environment, which reduces the effectiveness of personal hygiene and promotes the transdermal spread of skin microorganisms to the surgical incision.

Since most post-cesarean infections occur in the community, a woman's risk should also be assessed at the time of discharge. Evidence-based risk factors for infection after caesarean section (ie, high BMI, diabetes) should be identified because these criteria can be used to determine the choice and duration of postoperative dressings. For women with a BMI ≥ 35, tissue viability specialists should be consulted. Cosmetic surgeons may leave sutures in place for up to 14 days to improve cosmetic results, but it is unclear whether this is a useful strategy after CS. An additional factor is that antibiotic prophylaxis in obesity may be less effective because of reduced tissue penetration or even because the dose is too low for obese women. In children, it is common to titrate the antibiotic dose based on the child's body weight. This practice is not common in adults, and Falagas et al suggested that it reduces the effectiveness of antibiotics in obesity. eleven

Almost all infections after caesarean section develop after discharge from the hospital 2

Intraoperative management
Obstetric departments vary in their intraoperative methods, and there is no evidence to suggest that a particular approach is superior. Each department should develop its own standards of practice and strive to improve the skills of all employees.

Obstetricians should adopt a consensus approach to intraoperative management in the ward. Examples include standardizing the choice of antibiotic therapy, skin preparation, skin closure and suture materials, and operating room protocols such as access and temperature control during surgery.
Published data should be considered when choosing intraoperative management options. The NICE guideline for caesarean sections includes recommendations for surgical technique and recommends preoperative antibiotic prophylaxis with a drug other than co-amoxiclav. 4 One study found that in obese, nondiabetic women, subcutaneous suture was associated with better short-term cosmetic results and shorter skin closure time than interrupted suture. However, the risk of postoperative superficial surgical site infection was slightly higher and the level of postoperative pain was significantly higher. 12 NICE indicates that there is insufficient evidence on the comparative value of different suture materials for skin closure. 4

A 1998 meta-analysis of 25 studies involving a total of 12,249 patients with abdominal wound closure

concluded that continuous sutures with nonabsorbable suture materials should be used for most wounds, but infection or abdominal Suspended sutures should be used in cases where the expansion of the cavity is suspected. 13 Monofilament sutures are associated with a lower risk of infection than woven sutures. 14 Studies have shown that skin closure using Steri-Strips™ is superior to subcutaneous sutures for abdominal surgery. 15 Steri-StripsTM adhesive strips provide the practical benefit of preventing patient contact with the wound, but cannot be used in conjunction with dressings such as PICO ◊ . There was no difference in the complication rates between interrupted and continuous sutures using slowly absorbable sutures for closure of primary elective midline abdominal incisions. 16

There was consensus among advisory board members that monofilament sutures should replace wrapped sutures for all incisions, but differences in choice of absorbable or nonabsorbable sutures for skin closure. Given the lack of definitive information, there is no one-size-fits-all solution for all departments. The board recommended that departments standardize suture material selection and skin closure, as this should improve staff skills and facilitate consistent patient information.
Joel-Cohen transverse incision is recommended for cesarean section. 4 Some board members noted that a low vertical incision may be appropriate for very obese women, but such experience is limited.

Superficial wound drainage should not be used during caesarean section. 4 This may be associated with increased pain, longer healing time, risk of adhesions, and increased risk of infection.

There are insufficient data to make antibiotic dosing recommendations in obese women, who may require higher or more frequent doses because of their higher body weight. The dose of antibiotics with a narrow therapeutic index, such as gentamicin, is calculated based on body weight. Some surgeons use this approach for safer antibiotics such as coamoxiclav and cephalosporins when calculating the appropriate dose for women weighing more than 80 kg. The surgical department should coordinate with clinical microbiologists and pharmacologists on the best approach.

Infection can seriously affect a patient's ability to support his or her family, burdening clinic visits and travel costs.

Women should be advised to comb their hair. Shaving and waxing are associated with local damage and changes in the local microflora may increase the risk of infection. However, these changes are not permanent, and women who shave or wax less than 48 hours before admission to the hospital are not necessarily at increased risk of infection.

Typically, chlorhexidine is the disinfectant of choice for skin preparation. During procedures such as diathermy, simultaneous use of preparations containing ethyl alcohol should be avoided. Chlorhexidine is available in different formulations. Chloraprep® (2% chlorhexidine in 70% isopropyl alcohol) comes with an applicator to ensure even application. The solution should be applied to air-dried skin.

Postoperative management

Immediately after surgery, patients should be informed about wound hygiene and signs of infection, and advice should be given on dressing and bathing. Verbal recommendations should be supported by consistent written information; Health professionals should avoid giving conflicting advice. The information should include a list of recommended websites that provide quality information, as well as a telephone number to contact the midwifery service. Written information should be provided in a simple form, such as on a card, and reviewed by the obstetrician with the patient at discharge.

The bandage usually stays on for five to seven days. There are no data to make practical recommendations after this period, but a longer duration of patch placement should be considered in women at high risk of complications. The board agreed to assess the injury on the 7th. Given concerns about an increased risk of late-onset infection in obese individuals, it is recommended that these women consider wearing a new sealed dressing for an additional 4-7 days. This should be supported by adequate patient education to enable the woman to monitor and assess her wound and to ensure easy access to a designated healthcare professional for consultation.

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