

# Reducing infection rates in Caesarean section patients with BMI of 35 or more: a 138 patient evaluation

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## Introduction

Surgical site infection is responsible for significant additional costs to the NHS<sup>1</sup>. Caesarean section infection rates are higher than would be expected for surgery which is not considered a high risk procedure. Recently, Wloch *et al.*,<sup>2</sup> on behalf of the HPA, carried out an audit of 4000 patients following C section and found that the overall infection rate was 9.6%. On further analysis, the study revealed that 19.28% of patients with a BMI of over 35 would go on to develop a wound infection.

An audit in the Wigan Wrightington and Leigh NHS Trust revealed an overall infection rate of 12% across all C section patients, however, more importantly, there were between 3 and 4 readmissions per month in patients with a BMI of >35. Readmissions on average would be for 3 days, which would equate to around £1050 per patient episode. This does not take into account the human cost, added suffering for the mother, loss of bonding time and the potential impact on the family.

The use of Negative Pressure Wound Therapy (NPWT) for the management of incisions has been pioneered in the fields of orthopaedic trauma surgery and in cardiac surgery<sup>3,4</sup>. Stannard *et al.*,<sup>3</sup> suggest that the exact modes of action of NPWT for the management of incisions are not yet known however, the authors believe that NPWT can help to remove some of the fluid and debris which builds up in the wound and can help to reduce oedema.

In 2006, a study using Negative Pressure Wound Therapy in orthopaedic trauma patients highlighted the benefits of the therapy in relation to wound closure, wound drainage and reduced length of stay<sup>5</sup>. The authors found a reduction in wound infections with 10% in the NPWT group and 19% in the control group. The author's also found faster cessation of drainage and reduced length of stay when using NPWT. Grauhan *et al.*,<sup>4</sup> studied the effect of NPWT in a prospective trial in a group of 150 cardiothoracic surgery patients undergoing coronary artery bypass graft with BMI > 30.

75 patients were allocated NPWT and 75 patients had standard wound dressings. 4% (3) of the NPWT group developed infections compared with 16% (12) in the standard treatment group.

The local tissue viability and infection control nurses together with the obstetricians therefore opted to evaluate the use of a new negative pressure wound therapy device for the management of high BMI patients undergoing C section.

## Methods

It was decided to evaluate the impact of PICO<sup>®</sup> Single Use Negative Pressure Wound Therapy system (Smith and Nephew, Hull) in the patients with high BMI (>35). For the purposes of this evaluation, only those with high BMI were recorded, however, a change in therapy to OPSITE<sup>®</sup> Post Op Visible (Smith and Nephew Hull) for patients with BMI < 35 was also introduced. A multidisciplinary team which included the Tissue Viability Nurse, Obstetricians and Infection Control Nurse met to discuss the implementation of the new dressing protocol. Patient information was also improved to help patients identify to contact if they had any problems and a staff education programme was rolled out to help identify any existing knowledge gaps.

## Results

The average age of the patients undergoing a caesarean section was 30.3 years (median 30, range 18 – 42 years). The average Body Mass Index of the patient undergoing a caesarean was 39.4 Kg/m<sup>2</sup> (median 37, range 35 – 70). 138 patients with BMI of 35 or more were included in the evaluation over a two year period. Of these 138, one patient developed a superficial infection but was not readmitted for treatment. No other patients developed a wound infection during the evaluation. Further analysis revealed that 49 patients had a BMI of 40 or more, with 89 patients having a BMI of between 35 and 39.

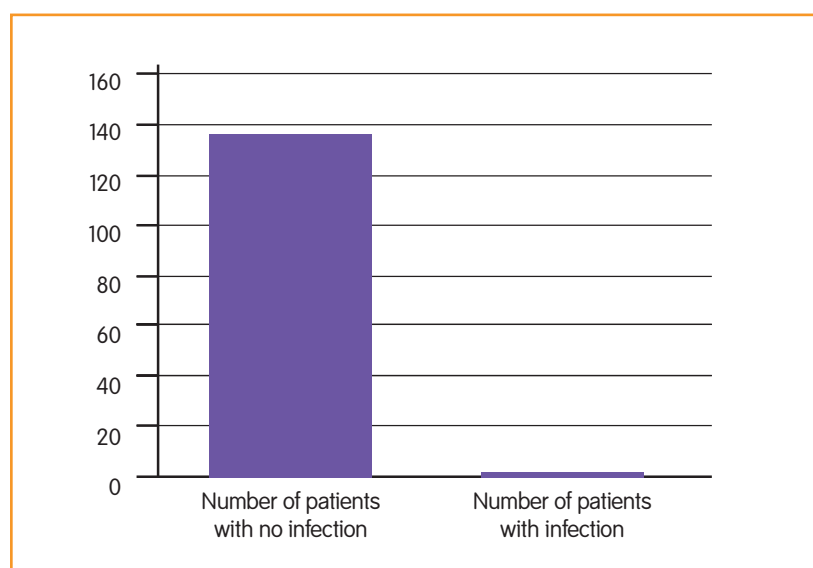


Figure 1: Number of Caesarean Sections (with and without infection)

## Discussion and Conclusion

According to Wloch *et al.*,<sup>2</sup> patients with a high body mass index are at increased risk of developing a wound infection following Caesarean section (19.28%). In our patient population if this figure is used as a guide, 26.4 patients should have developed a wound infection. Using PICO as the post-operative dressing, 1 patient developed a superficial infection and there were no readmissions during the evaluation period. Jenks *et al.*,<sup>1</sup> similarly found 25 SSI in

C section patients with an additional length of stay of 142 attributed to this with a median cost of £3,716 per patient episode. This amounted in an extra spend of £97,021 a group of 25 patients. This is a patient evaluation and not a randomised trial, however, the authors feel that there is a significant benefit when using NPWT as an incision management therapy. This therapy not only reduces the costs to the service but can also help to avoid unnecessary suffering for patients who have just given birth.

### References

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