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Date of Search: 09 October 2017.

Sources Searched: Medline, Embase, PubMed, DynaMed Plus.

Iodine for the Prevention of Puerperal Sepsis

[See full search strategy](#)

Evidence Summary:

Vaginal Cleansing

According to the results of a Cochrane systematic review (2014, Haas, DM et al) povidone-iodine used as a vaginal cleansing solution may reduce postoperative endometritis, particularly for women undergoing caesarean delivery, those already in labour or with ruptured membranes. This result is however based on low-moderate quality evidence from five randomised/quasi-randomised trials (1766 participants). No differences were detected in terms of surgical site infection or maternal fever.

The results of a recent systematic review (2017 Caissutti, C, et al) concur with those of the Cochrane review, reporting a significantly lower incidence of endometritis in women undergoing caesarean delivery or those with ruptured membranes. It is unknown as to whether vaginal cleansing might be effective for caesarean deliveries performed in women not in labour and for those without ruptured membranes.

As a simple, generally inexpensive intervention providers should consider implementing preoperative vaginal cleansing with povidone-iodine before performing caesarean sections.

Skin Preparation

The results of a Cochrane systematic review (2014, Hadiati D.R. et al) to investigate the effects of preoperative skin preparation for caesarean sections found that chlorhexidine gluconate compared with iodine alone was associated with lower rates of bacterial growth at 18 hours after caesarean section. Results were derived from six trials involving 1522 women. This outcome however was based on evidence which was judged to be low/very low quality. No difference in outcome was found in terms of wound infection (five trials) or uterine infection including endometritis (two trials).

A recent randomised controlled trial (2016, Methodius G. Tuuli) reported a significantly lower risk of surgical site infection following caesarean section in patients when chlorhexidine–alcohol was used for preoperative skin preparation as compared to iodine–alcohol. The rates of surgical-site infection were however low overall and the absolute difference between groups was relatively modest. There were no significant differences reported for length of hospital stay, postoperative infectious complications, endometritis and adverse skin reactions. The CAPICA Trial (2017, Springel E.H et al) failed to show a reduction in caesarean surgical site infection when chlorhexidine-alcohol is compared with povidone-iodine aqueous scrub and paint.

More high-quality research regarding skin preparation is needed for women, particularly those at higher risk of surgical site infection or those who have an established infection before caesarean section.

1. Vaginal Cleansing Before Cesarean Delivery: A Systematic Review and Meta-analysis.

Author(s): Caissutti, Claudia; Saccone, Gabriele; Zullo, Fabrizio; Quist-Nelson, Johanna; Felder, Laura; Ciardulli, Andrea; Berghella, Vincenzo

Source: Obstetrics and gynecology; Sep 2017; vol. 130 (no. 3); p. 527-538

Publication Date: Sep 2017

Publication Type(s): Meta-analysis Journal Article Review

PubMedID: 28796683

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract:OBJECTIVE To assess the efficacy of vaginal cleansing before cesarean delivery in reducing postoperative endometritis. DATA SOURCES MEDLINE, Ovid, EMBASE, Scopus, Clinicaltrials.gov, and Cochrane Library were searched from their inception to January 2017. METHODS OF STUDY SELECTION Selection criteria included all randomized controlled trials comparing vaginal cleansing (ie, intervention group) with a control group (ie, either placebo or no intervention) in women undergoing cesarean delivery. Any method of vaginal cleansing with any type of antiseptic solution was included. The primary outcome was the incidence of endometritis. Meta-analysis was performed using the random-effects model of DerSimonian and Laird to produce summary treatment effects in terms of relative risk (RR) with 95% CI. TABULATION, INTEGRATION, AND RESULTS Sixteen trials (4,837 women) on vaginal cleansing immediately before cesarean delivery were identified as relevant and included in the review. In most of the included studies, 10% povidone-iodine was used as an intervention. The most common way to perform the vaginal cleansing was the use of a sponge stick for approximately 30 seconds. Women who received vaginal cleansing before cesarean delivery had a significantly lower incidence of endometritis (4.5% compared with 8.8%; RR 0.52, 95% CI 0.37-0.72; 15 studies, 4,726 participants) and of postoperative fever (9.4% compared with 14.9%; RR 0.65, 95% CI 0.50-0.86; 11 studies, 4,098 participants) compared with the control group. In the planned subgroup analyses, the reduction in the incidence of endometritis with vaginal cleansing was limited to women in labor before cesarean delivery (8.1% compared with 13.8%; RR 0.52, 95% CI 0.28-0.97; four studies, 440 participants) or those with ruptured membranes (4.3% compared with 20.1%; RR 0.23, 95% CI 0.10-0.52; three studies, 272 participants). **CONCLUSION Vaginal cleansing immediately before cesarean delivery in women in labor and in women with ruptured membranes reduces the risk of postoperative endometritis. Because it is generally inexpensive and a simple intervention, we recommend preoperative vaginal preparation before cesarean delivery in these women with sponge stick preparation of povidone-iodine 10% for at least 30 seconds. More data are needed to assess whether this intervention may be also useful for cesarean deliveries performed in women not in labor and for those without ruptured membranes.** SYSTEMATIC REVIEW REGISTRATION PROSPERO International prospective register of systematic reviews, <https://www.crd.york.ac.uk/PROSPERO/>, CRD42017054843.

Database: Medline

2. A randomized open-label controlled trial of chlorhexidine-alcohol vs povidone-iodine for cesarean antisepsis: The CAPICA trial

Author(s): Springel E.H.; Wang X.-Y.; Sarfoh V.M.; Stetzer B.P.; Weight S.A.; Mercer B.M.

Source: American Journal of Obstetrics and Gynecology; 2017

Publication Date: 2017

Publication Type(s): Article In Press

Abstract:Background: Identification of optimal surgical site antisepsis preparations may reduce cesarean-related surgical site infections. Two recently published investigations examined efficacy of chlorhexidine-alcohol and iodine-alcohol preparations. No previous randomized controlled trial has compared chlorhexidine-alcohol to povidone-iodine aqueous scrub and paint in reduction of cesarean-related surgical site infection. Objective: The purpose of the study was to determine if chlorhexidine-alcohol would result in fewer surgical site infections than povidone-iodine when used as skin antisepsis preparation prior to cesarean delivery. Study Design: This study was a single-center pragmatic randomized controlled trial at an urban tertiary care institution to compare chlorhexidine-alcohol 26-mL single-step applicator to povidone-iodine aqueous scrub and paint 236-mL wet skin tray as preoperative skin antiseptic preparation for women undergoing cesarean delivery. Patients were eligible for study participation if they could provide informed consent in English or Spanish, were ≥ 18 years of age, did not have clinical chorioamnionitis, were unlikely to be lost to follow-up, and had no sensitivities to chlorhexidine, betadine, or iodine. Treatment was assigned by computer-generated simple 1:1 randomization immediately before skin preparation. The primary outcome was surgical site infection occurring within 30 days of cesarean delivery including ≥ 1 of: superficial or deep surgical site infection, or endometritis, according to Centers for Disease Control and Prevention definitions. Analysis was by intent to treat. Categorical outcomes were compared using Fisher exact test. The Wilcoxon rank-sum test was performed for continuous outcomes. This trial was institutional review board approved and registered at ClinicalTrials.gov (NCT02202577). Results: In all, 932 subjects (461 assigned to chlorhexidine-alcohol, 471 assigned to povidone-iodine) were randomized from February 2013 through May 2016. Rate of follow-up evaluation after 30 days was 99% (455) in the chlorhexidine-alcohol group and 97% (455) in the povidone-iodine group. Surgical site infection occurred in 29 (6.3%) of the chlorhexidine-alcohol group and 33 (7.0%) in the povidone-iodine group ($P = .38$). The rates of individual components of the primary outcome were as follows: superficial surgical site infection (4.6% v 5.5%; $P = .55$), deep surgical site infection (0.0% v 0.4%; $P = .50$), and endometritis (1.7% v 1.1%; $P = .42$) in chlorhexidine-alcohol vs povidone-iodine arms, respectively. All results were similar in per protocol analysis. **Conclusion: Preoperative antiseptic skin preparation with chlorhexidine-alcohol 26-mL single-step applicator before cesarean did not result in less frequent surgical site infection when compared with povidone-iodine aqueous scrub and paint 236-mL wet skin preparation tray. Povidone-iodine should still be considered as acceptable for preoperative surgical site antisepsis for cesarean delivery.** Copyright © 2017 Elsevier Inc.

Database: EMBASE

3. Systematic review and meta-analysis of randomized controlled trials evaluating prophylactic intra-operative wound irrigation for the prevention of surgical site infections

Author(s): De Jonge S.W.; Boldingh Q.J.J.; Boermeester M.A.; Solomkin J.S.; Allegranzi B.; Egger M.; Dellinger E.P.

Source: Surgical Infections; 2017; vol. 18 (no. 4); p. 508-519

Publication Date: 2017

Publication Type(s): Review

Abstract:Background: Surgical site infections (SSIs) are one of the most common hospital-acquired infections. To reduce SSIs, prophylactic intra-operative wound irrigation (pIOWI) has been advocated, although the results to date are equivocal. To develop recommendations for the new World Health Organization (WHO) SSI prevention guidelines, a systematic literature review and a meta-analysis were conducted on the effectiveness of pIOWI using different agents as a means of reducing SSI. Methods: The PUBMED, Embase, CENTRAL, CINAHL, and WHO databases were searched. Randomized controlled trials (RCTs) comparing either pIOWI with no pIOWI or with pIOWI using different solutions and techniques were retrieved with SSI as the primary outcome. Meta-analyses were performed, and odds ratios (OR) and the mean difference with 95% confidence intervals (CI) were extracted and pooled with a random effects model. Results: Twenty-one studies were suitable for analysis, and a distinction was made between intra-peritoneal, mediastinal, and incisional wound irrigation. A low quality of evidence demonstrated a statistically significant benefit for incisional wound irrigation with an aqueous povidone-iodine (PVP-I) solution in clean and clean contaminated wounds (OR 0.31; 95% CI 0.13-0.73; $p = 0.007$); 50 fewer SSIs per 1,000 procedures (from 19 fewer to 64 fewer). Antibiotic irrigation had no significant effect in reducing SSIs (OR 1.16; 95% CI 0.64-2.12; $p = 0.63$). **Conclusion: Low-quality evidence suggests considering the use of prophylactic incisional wound irrigation to prevent SSI with an aqueous povidone-iodine solution. Antibiotic irrigation does not show a benefit and therefore is discouraged.**© Copyright 2017, Mary Ann Liebert, Inc.

Database: EMBASE

4. Optimal skin antiseptic agents for prevention of surgical site infection in cesarean section: a meta-analysis with trial sequential analysis.

Author(s): Huang, Huaping; Li, Guirong; Wang, Haiyan; He, Mei

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Aug 2017 ; p. 1-8

Publication Date: Aug 2017

Publication Type(s): Journal Article

PubMedID: 28817989

Abstract:**PURPOSE** The best choice of antiseptic agent for skin preparation at cesarean section remains controversial. We performed this meta-analysis to assess whether chlorhexidine (CH)-based skin antisepsis was more effective than povidone iodine (PI)-based antisepsis for the prevention of surgical site infection (SSI) after cesarean section.**METHODS** PubMed, EMBASE, and the Cochrane Library were systematically searched to identify English publications that compared chlorhexidine gluconate (CH) as a skin preparation agent with PI in cesarean section. The primary outcome was SSI rate. Review Manager 5.3 was used to analyze the collected data and trial sequential analysis (TSA) Software 0.9 (Cochrane Collaboration, Oxford, UK) beta was applied to estimate whether the overall pooled outcome was conclusive.**RESULT** Six articles involving 4385 participants were included in this study. The outcomes showed that CH-based skin antisepsis, compared with PI-based antisepsis, was not associated with a decreased overall rate of SSI (risk ratio [RR], 0.74; 95% confidence interval [CI], 0.54-1.02; $p = .07$). TSA indicated that the current available evidence was inconclusive. There were no differences in adverse skin reactions in the two groups.**CONCLUSIONS** This study provides evidence that CH-based antisepsis for skin preparation does not show an additional advantage in reducing risk of SSI after cesarean section. However, additional high-quality, randomized clinical trials are needed to confirm these findings.

Database: Medline

5. May intraperitoneal irrigation with Betadine improve cesarean delivery outcomes? Results of a 6 years' single centre experience.

Author(s): Marino, Riccardo; Capriglione, Stella; Morosetti, Giulia; Di Angelo Antonio, Silvia; Miranda, Andrea; Pazzola, Marta; Lopez, Salvatore; Patrizi, Lodovico; Angioli, Roberto; Stella, Paolo

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Mar 2017 ; p. 1-7

Publication Date: Mar 2017

Publication Type(s): Journal Article

PubMedID: 28274149

Abstract: PURPOSE Cesarean presents increased risk of adverse outcomes, such as endometritis, bacteremia, peritonitis, and maternal fever. This retrospective study aims to evaluate, for the first time in Literature, the effects Betadine washing versus normal saline washing after uterine closure in women undergoing cesarean delivery (CD) at ≥ 36 gestational weeks. METHODS Of the 2080 patients identified retrospectively for the analysis at Department of Obstetrics and Gynecology of San Camillo Hospital of Rome, 1042 were assigned to "Betadine group" and 1038 to "No Betadine group". There were no differences noted for maternal and obstetric characteristics. The outcomes of the present study were to evaluate the incidence of postoperative infections or fever; the reduction of blood white cells among preoperative and postoperative exams; mean and median time of intestinal recanalization, of postoperative ambulation and of 24-h post-CD pain, evaluated using VAS scale. RESULTS Betadine group patients reported a statistically significant lower white cells increment, a lower mean time to ambulation and intestinal recanalization after CD and a lower 24-h post-CD pain and infections. CONCLUSIONS Betadine intraperitoneal irrigation during CD seems to improve postoperative CD outcomes and patients' quality of life.

Database: Medline

6. Vaginal cleansing prior to caesarean section and postoperative infectious morbidity

Author(s): Asad S.; Batool Mazhar S.; Khalid Butt N.; Habiba U.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Mar 2017; vol. 124 ; p. 45

Publication Date: Mar 2017

Publication Type(s): Conference Abstract

Available at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from Wiley Online Library Medicine and Nursing Collection 2017 - NHS

Abstract: Introduction Caesarean section, a common obstetric surgical procedures has ten-fold increased risk of infective complications compared with vaginal deliveries. A strategy employed to reduce postoperative infections is cleansing of all body surfaces in contact during this procedure including vagina. The objective was to compare the frequency of postoperative infectious morbidity in emergency caesarean section with and without preoperative vaginal cleansing with povidone iodine. Methods Randomised controlled trial at MCHC PIMS, Islamabad from 1 February to 31 July 2016 among 434 women undergoing emergency caesarean with labor duration >6 h irrespective of membrane rupture. Women with diabetes mellitus, anaemia, obstructed labour or any febrile condition were excluded. At the time of surgery, equal numbers were randomly assigned to Group A receiving vaginal and abdominal scrub, and group B only abdominal scrub. Follow-up for infectious morbidity, namely fever, wound infection and endometritis, was up to 3 weeks. Results The mean age was 28.4 years in group A and 27.5 years in group B, mean gestational age was 38.5 weeks in group A and 37.9 weeks in group B. Fever was seen in 4.1% of women in group A and 7.4% in group B ($P = 0.149$). Endometritis was detected in 1.4% of women in group A and 8.8% in group B ($P = 0.000$). Wound Infection was noted in 1.4% of women in group A and 3.7% in group B ($P = 0.126$).

Conclusion Additional povidone iodine vaginal cleansing before emergency caesarean section significantly decreased postpartum endometritis. Also noted was a trend toward reduced fever and wound infection.

Database: EMBASE

7. Effect of vaginal cleansing on postoperative factors in elective caesarean sections: a prospective, randomised controlled trial.

Author(s): Göymen, Abdullah; Şimşek, Yavuz; Özdurak, Halil İbrahim; Özkaplan, Şükran Esra; Akpak, Yaşam Kemal; Özdamar, Özkan; Oral, Serkan

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Feb 2017; vol. 30 (no. 4); p. 442-445

Publication Date: Feb 2017

Publication Type(s): Randomized Controlled Trial Journal Article

PubMedID: 27049354

Abstract:OBJECTIVE To assess the effect of povidone iodine versus benzalkonium chloride, which were applied preoperatively for vaginal disinfection in caesarean sections, on postoperative factors. METHODS One hundred and twenty patients underwent elective caesarean section were divided into three groups using the simple randomisation method: Group 1 (povidone iodine, n: 41); Group 2 (benzalkonium chloride, n: 39); Group 3 (control group, n: 40). Demographic data, duration of operation, amount of bleeding, postoperative pain, time to first flatulence and defaecation, haematological parameters on postoperative day 1 were compared between three groups. Pain evaluation was performed at 6th and 24th postoperative hour using Visual Analogue Scale. RESULTS No statistically significant differences were detected between the groups in demographic characteristics. There were no significant differences between the groups with respect to the duration of operation and hospital stay. The patients in the group who underwent povidone iodine vaginal cleansing had statistically significantly less postoperative pain as compared to control group. No difference was observed between the groups in haematological parameters other than C-reactive protein (CRP); however, CRP levels at 24th post-operative hour were significantly lower in Group 1 compared to the other groups. CONCLUSIONS The preoperative vaginal cleansing with povidone iodine could reduce the postoperative pain, analgesic need and infection parameter.

Database: Medline

8. Comparative effectiveness of skin preparations for the prevention of wound infection and endometritis following cesarean delivery: A systematic review and network meta-analysis

Author(s): Roeckner J.; Sanchez-Ramos L.

Source: American Journal of Obstetrics and Gynecology; Jan 2017; vol. 216 (no. 1)

Publication Date: Jan 2017

Publication Type(s): Conference Abstract

Abstract:OBJECTIVE: To systematically review the literature and to quantitatively evaluate the comparative efficacy various antiseptic treatments for the prevention of wound infection and endometritis following cesarean delivery. STUDY DESIGN: We searched for all relevant randomized clinical trials of patients treated with any type of perioperative skin agent prior to cesarean delivery published from 1966 until June 2016 with wound infection or endometritis as an outcome using (MEDLINE, EMBASE, Cochrane CENTRAL, and reference lists of included studies and relevant reviews). This meta-analysis was guided through the use of the PRISMA Extension for Network Meta-analysis. Network meta-analysis was performed by running a contrast-based network meta-analysis in Stata (Stata Corp, College Station, TX) using mvmeta or metareg commands that assess consistency, and graph the data and results. Direct and indirect pairwise comparisons were carried out using multivariate random-effects models. Frequentist method was employed for the fitted model to calculate the ranking probabilities. RESULTS: For the prevention of wound infection, we identified six studies comprising 3,929 patients allocated to the following treatments: iodine in ethanol (AI), alcoholic chlorhexidine (AC), parachlorometaxyleneol and povidone-iodine scrub (AI+PP), or alcoholic povidone iodine with alcoholic chlorhexidine (AC+AI). We identified no significant differences between the use of any specific antiseptic skin preparation with the odds of wound infection. For the prevention of endometritis, three studies consisting of 1276 patients were included. Multi-treatment comparisons showed that no agent was significantly superior.

CONCLUSION: Among patients undergoing cesarean delivery, there were no significant differences between any of the antiseptic skin preparation methods and the risk of wound infection or endometritis. (Figure Presented).

Database: EMBASE

9. A randomized controlled trial of chlorhexidine-alcohol versus povidone-iodine for cesarean antisepsis

Author(s): Springel E.H.; Sarfoh V.; Stetzer B.; Weight S.; Mercer B.; Wang X.-Y.

Source: American Journal of Obstetrics and Gynecology; Jan 2017; vol. 216 (no. 1)

Publication Date: Jan 2017

Publication Type(s): Conference Abstract

Abstract:OBJECTIVE:We hypothesized that use of Chlorhexidine-Alcohol (CA) when used as skin anti-sepsis preparation prior to cesarean delivery would result in less surgical site infections than Povidone-Iodine (PI) (CD). STUDY DESIGN: This is a single-center randomized controlled trial at an urban tertiary care institution comparing 1. CA (ChlorPrep) and 2. PI (Betadine) scrub and paint as pre-operative skin antiseptic preparation for women undergoing CD. Patients were eligible for study participation if they could provide informed consent in English or Spanish, were over 18 years of age, did not have a diagnosis of chorioamnionitis, were unlikely to be lost to follow up, and had no sensitivities to chlorhexidine, betadine, or iodine. Patients were randomized immediately before skin preparation prior to CD. The primary outcome was Surgical Site Infection ("Composite SSI") occurring within 30 days, which included one or more of: Superficial or Deep SSI, or Endometritis, according to Center for Disease Control definitions. Analysis was by intent to treat. RESULTS: 932 subjects (461 assigned to CA, 471 assigned to PI) were randomized from February 2013 to May 2016. Rate of follow up for evaluation after 30 days were 97% in the CA group and 96% in the PI group. Composite SSI occurred in 29 (6.3%) of the CA group and 33 (7.0%) in the PI group ($p=0.38$). The rates of individual components of the primary outcome were as follows: Superficial SSI (4.6% v 5.5%; $p=0.55$), Deep SSI (0.0% v 0.4%; $p=0.50$), and Endometritis (1.7% v 1.1%; $p=0.42$), in CA v PI arms respectively. A planned secondary outcome of composite non-SSI wound complications including separation, hematoma, seroma, and skin reaction was similar between CA and PI groups (4.1% v 3.6%; $p=0.74$). In post-hoc analyses: re-admission to hospital for management of SSI was similar between groups (1.1% v 1.9%; $p=0.38$). Evaluation of SSI in women undergoing CD in labor (11% v 10%; $p=0.85$) and those with BMI >35 kg/m² (6.8% v 9.2%; $p=0.34$) revealed no differences between CA and PI groups, respectively. All results were similar in per protocol analysis. **CONCLUSION: Pre-operative antiseptic skin preparation with Chlorhexidine- Alcohol before cesarean delivery did not result in less frequent SSI or other complications when compared with preoperative Povidone-Iodine preparation.**

Database: EMBASE

10. The Betadine trial - Antiseptic wound irrigation prior to skin closure at caesarean section to prevent surgical site infection: A randomised controlled trial

Author(s): Mahomed K.; Ibiebele I.; Buchanan J.

Source: Australian and New Zealand Journal of Obstetrics and Gynaecology; Jun 2016; vol. 56 (no. 3); p. 301-306

Publication Date: Jun 2016

Publication Type(s): Article

PubMedID: 26847398

Available at [Australian and New Zealand Journal of Obstetrics and Gynaecology](#) - from Wiley Online Library Medicine and Nursing Collection 2017 - NHS

Abstract:Background Surgical site infections (SSIs) occur in around 10% of women following a caesarean section. Efforts to reduce SSI include wound irrigation with povidone-iodine (PVI), but studies are nonconclusive, mostly old and few on women having caesarean section (CS). Aims To assess povidone-iodine (PVI) (Betadine) irrigation of wound prior to skin closure in reducing incidence of SSI after CS. Our hypothesis was that there would be no benefit with its use in reducing SSIs. Materials and Methods A randomised controlled trial with 3027 women. Women having CS were allocated to receive PVI irrigation or no irrigation after closure of fascia and before skin closure. Women were followed up to four weeks to assess for SSI. Main outcome measure was surgical site infection. Results The two groups (1520 in Betadine and 1507 on no Betadine group) were well balanced. The incidence of SSI was similar in the two groups (9.5% vs 9.8%, RR 0.97; 95% CI 0.78-1.21). There was no difference between groups (2.6% vs 2.0%, RR 1.29, 95% CI 0.81-2.06 Betadine vs no Betadine, respectively) in readmission for wound infection requiring intravenous antibiotics; this was so in both the elective CS group as well as CS in labour group. **Conclusion PVI irrigation after the closure of fascia and before closure of skin is of no benefit in the prevention of SSI in women undergoing CS.** Copyright © 2016 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists.

Database: EMBASE

11. Povidone-Iodine wound irrigation prior to skin closure at caesarean section to prevent surgical site infection: A randomised controlled trial

Author(s): Mahomed K.; Buchanan J.; Ibiebele I.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2016; vol. 123 ; p. 146-147

Publication Date: Jun 2016

Publication Type(s): Conference Abstract

Available at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from Wiley Online Library Medicine and Nursing Collection 2017 - NHS

Abstract: Introduction Over 200 million surgical procedures are performed annually around the world. Surgical site infections (SSIs) are reported to occur in up to 30% of all surgical procedures, and in 8.4% of women having a caesarean section in a UK study. SSIs have many negative effects including pain, prolonged hospitalisation or readmission, need for antibiotics, return to theatre and increasing costs. Extensive efforts have been made to reduce SSI after caesarean section, including preoperative prophylactic antibiotics, antiseptic solutions for the cleansing of skin, pre and post operative vaginal cleaning with an antiseptic solution and the use of negative pressure wound dressing. Studies on the use of wound irrigation with Povidone-Iodine (PVI), are non conclusive, mostly old and few on women having caesarean section (CS). Objective To conduct a large study to determine if irrigation with PVI solution would reduce the rate of SSI as defined by CDC criteria in women undergoing caesarean section (elective and in labour). Methods A single centre randomised controlled trial with 3027 women. Women were randomised to "Betadine" or "no Betadine" group using sequentially numbered sealed opaque envelopes that contained the allocation. The allocation was prepared using computer generated list of random numbers using a variable block of 10 and performed by a staff member not part of the clinical team. The envelope with the allocation was opened by one of the theatre nurse. The intervention was wound irrigation with about 50 mls of 10% aqueous PVI solution (Betadine group). The solution in a bowl was poured in and around the incision site. In the control group the skin was closed without any wound irrigation. Women were followed-up to 4 outcome measure was surgical site infection. Results The two groups (1520 in Betadine and 1507 on no Betadine group) were well balanced. The incidence of SSI was similar in the two groups (9.5% versus 9.8%, RR 0.97; 95% CI 0.78-1.21). There were marginally more women in the Betadine group (2.6% versus 2.0%, RR 1.29, 95% CI 0.81-2.06) who were readmitted for wound infection requiring intravenous antibiotics; This was so in both the elective caesarean section group as well as caesarean section in labour group but the differences were not statistically significant.

Conclusion PVI irrigation after the closure of fascia and before closure of skin is of no benefit in the prevention of SSI in women undergoing caesarean.

Database: EMBASE

12. A Randomized Trial Comparing Skin Antiseptic Agents at Cesarean Delivery.

Author(s): Tuuli, Methodius G; Liu, Jingxia; Stout, Molly J; Martin, Shannon; Cahill, Alison G; Odibo, Anthony O; Colditz, Graham A; Macones, George A

Source: The New England journal of medicine; Feb 2016; vol. 374 (no. 7); p. 647-655

Publication Date: Feb 2016

Publication Type(s): Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Comparative Study Randomized Controlled Trial Journal Article

PubMedID: 26844840

Available at [The New England journal of medicine](#) - from Massachusetts Medical Society

Abstract:BACKGROUND Preoperative skin antisepsis has the potential to decrease the risk of surgical-site infection. However, evidence is limited to guide the choice of antiseptic agent at cesarean delivery, which is the most common major surgical procedure among women in the United States. METHODS In this single-center, randomized, controlled trial, we evaluated whether the use of chlorhexidine-alcohol for preoperative skin antisepsis was superior to the use of iodine-alcohol for the prevention of surgical-site infection after cesarean delivery. We randomly assigned patients undergoing cesarean delivery to skin preparation with either chlorhexidine-alcohol or iodine-alcohol. The primary outcome was superficial or deep surgical-site infection within 30 days after cesarean delivery, on the basis of definitions from the Centers for Disease Control and Prevention. RESULTS From September 2011 through June 2015, a total of 1147 patients were enrolled; 572 patients were assigned to chlorhexidine-alcohol and 575 to iodine-alcohol. In an intention-to-treat analysis, surgical-site infection was diagnosed in 23 patients (4.0%) in the chlorhexidine-alcohol group and in 42 (7.3%) in the iodine-alcohol group (relative risk, 0.55; 95% confidence interval, 0.34 to 0.90; $P=0.02$). The rate of superficial surgical-site infection was 3.0% in the chlorhexidine-alcohol group and 4.9% in the iodine-alcohol group ($P=0.10$); the rate of deep infection was 1.0% and 2.4%, respectively ($P=0.07$). The frequency of adverse skin reactions was similar in the two groups. **CONCLUSIONS The use of chlorhexidine-alcohol for preoperative skin antisepsis resulted in a significantly lower risk of surgical-site infection after cesarean delivery than did the use of iodine-alcohol.** (Funded by the National Institutes of Health and Washington University School of Medicine in St. Louis; ClinicalTrials.gov number, NCT01472549.).

Database: Medline

13. Skin Preparation for Prevention of Surgical Site Infection After Cesarean Delivery: A Randomized Controlled Trial.

Author(s): Ngai, Ivan M; Van Arsdale, Anne; Govindappagari, Shravya; Judge, Nancy E; Neto, Nicole K; Bernstein, Jeffrey; Bernstein, Peter S; Garry, David J

Source: Obstetrics and gynecology; Dec 2015; vol. 126 (no. 6); p. 1251-1257

Publication Date: Dec 2015

Publication Type(s): Comparative Study Randomized Controlled Trial Journal Article

PubMedID: 26551196

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract:OBJECTIVETo compare chlorhexidine with alcohol, povidone-iodine with alcohol, and both applied sequentially to estimate their relative effectiveness in prevention of surgical site infections after cesarean delivery.METHODSWomen undergoing nonemergent cesarean birth at greater than 37 0/7 weeks of gestation were randomly allocated to one of three antiseptic skin preparations: povidone-iodine with alcohol, chlorhexidine with alcohol, or the sequential combination of both solutions. The primary outcome was surgical site infection reported within the first 30 days postpartum. Based on a surgical site infection rate of 12%, an anticipated 50% reduction for the combination group relative to either single skin preparation group, with a power of 0.90 and an α of 0.05, 430 women per group were needed to detect a difference.RESULTSFrom January 2013 to July 2014, 1,404 women were randomly assigned to one of three groups: povidone-iodine with alcohol (n=463), chlorhexidine with alcohol (n=474), or both (n=467). The groups were similar with respect to demographics, medical disorders, indication for cesarean delivery, operative time, and blood loss. The overall rate of surgical site infection-4.3%-was lower than anticipated. The skin preparation groups had similar surgical site infection rates: povidone-iodine 4.6%, chlorhexidine with alcohol 4.5%, and sequential 3.9% (P=.85).CONCLUSION The skin preparation techniques resulted in similar rates of surgical site infections. Our study provides no support for any particular method of skin preparation before cesarean delivery.CLINICAL TRIAL REGISTRATIONClinicalTrials.gov, www.clinicaltrials.gov, NCT01870583.LEVEL OF EVIDENCEI.

Database: Medline

14. Evaluation of the risk of postcesarean endometritis with preoperative vaginal preparation with povidone-iodine: A randomized controlled study

Author(s): Abdallah A.A.

Source: Middle East Fertility Society Journal; Dec 2015; vol. 20 (no. 4); p. 246-250

Publication Date: Dec 2015

Publication Type(s): Article

Abstract:Objective To investigate the effect of preoperative vaginal preparation with povidone-iodine as a preventive intervention against postcesarean endometritis and wound infection. Design Randomized controlled study. Setting Suzan Mubarak University Hospital, Egypt & Aramco Hospital, Saudia Arabia. Patients 400 women were to undergo nonemergent cesarean delivery. Subjects received either standard abdominal scrub alone or abdominal scrub with an additional vaginal preparation with povidone-iodine solution. All subjects received prophylactic antibiotic preoperatively. Interventions Each subject's postoperative course was reviewed for development of febrile morbidity (temperature > 38.0degreeC), endometritis (temperature > 38.4degreeC accompanied by fundal tenderness occurring beyond the first postoperative day, in the absence of evidence of other infection), and wound infection. Results Postcesarean endometritis occurred in 7.0% of subjects who received a preoperative vaginal preparation and 14.5% of controls (P <.05). There was no measurable effect of a vaginal scrub on the development of postoperative fever or wound infection. The adjusted odds ratio for developing endometritis after a vaginal preparation was 0.44 (95% confidence interval (CI) 0.193-0.997). Multivariate analysis showed an increased risk of developing endometritis in association with severe anemia (adjusted OR 4.26, 95% CI 1.568-11.582), use of intrapartum internal monitors (adjusted OR 2.84, 95% CI 1.311-6.136), or history of antenatal genitourinary infection (adjusted OR 2.9, 95% CI 1.265-6.596). **Conclusion Preoperative vaginal scrub with povidone-iodine decreases the incidence of postcesarean endometritis. This intervention does not seem to decrease the overall risk of postoperative fever or wound infection.** Copyright © 2015 The Author.

Database: EMBASE

15. Vaginal disinfection before cesarean delivery in preventing postoperative infections: A meta-analysis

Author(s): Meng Y.-C.; Hu D.; Wan Q.

Source: Academic Journal of Second Military Medical University; Oct 2015; vol. 36 (no. 10); p. 1080-1086

Publication Date: Oct 2015

Publication Type(s): Article

Abstract:Objective To analyze the efficacy of vaginal disinfection with povidone-iodine before cesarean delivery in preventing postoperative infections. Methods Randomized controlled trials, identified from a systematic search of relevant databases including PubMed, EMBASE, CBM, CNKI, and CQVIP, were screened and evaluated according to standardized criteria. RevMan 5.2 software was used to do the meta-analysis. Results A total of 9 randomized controlled trials with 3 024 participants, with 1 508 in the vaginal cleansing group and 1 516 in the control group, were included in this meta-analysis. The analysis result showed that vaginal disinfection with povidone-iodine before cesarean delivery reduced the incidence of post-cesarean endometritis (RR=0.55, 95%CI 0.36-0.85, P=0.007). The incidence of post-cesarean endometritis was significantly reduced in women with ruptured membranes (RR=0.29, 95%CI: 0.16-0.52, P<0.000 1) and women in labor (RR=0.63, 95%CI 0.41-0.96, P=0.03), but not significantly reduced in the women with intact membranes (RR=0.73, 95%CI 0.50-1.08, P=0.11) or women not in labor (RR=0.79, 95%CI 0.53-1.17, P=0.24). Vaginal disinfection could not help to reduce the incidence of postoperative wound infection (RR=0.80, 95%CI 0.53-1.22, P=0.30) or postoperative fever (RR=0.92, 95%CI 0.76-1.11, P=0.37).

Conclusion Vaginal disinfection with povidone-iodine before cesarean delivery can decrease the risk of post-cesarean endometritis, especially for women undergoing cesarean delivery with ruptured membranes or in labor, but vaginal disinfection do not reduce the risk of postoperative wound infection or fever. Copyright © 2015, Second Military Medical University Press. All rights reserved.

Database: EMBASE

16. Is a vaginal betadine wash after caesarean section an effective intervention in reducing the incidence of postoperative endometritis and sepsis?

Author(s): Vanes N.K.; Castleman J.; Ganapathy R.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2015; vol. 122 ; p. 176

Publication Date: Apr 2015

Publication Type(s): Conference Abstract

Available at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from Wiley Online Library Medicine and Nursing Collection 2017 - NHS

Abstract:Introduction The objective of this study was to determine whether vaginal betadine washes immediately following caesarean section led to reduction in postoperative infection rates. Method In an attempt to reduce the incidence of postoperative infections our department adopted a universal policy of vaginal cleansing with betadine after elective and emergency caesareans. This study was an audit of the change of this clinical practice. The primary outcomes measured were endometritis, sepsis, fever, hospital readmission or wound complication. Results The period of study was over a 4 month period when 172 women underwent elective and emergency caesareans. In the study period there were 72 elective caesareans and 100 emergency caesarean procedures. In the elective procedures there were 4 cases where antibiotics were given empirically for suspected superficial wound infection (wound cultures were negative in all) and there was one case of proven urinary tract infection. In the emergency cases there were 9 cases of culture proven wound infections and 5 cases of urinary tract infections. 2 cases of antenatally diagnosed chorioamnionitis that received antibiotics were not included in the analysis. Analysis of the cases of infection in the elective caesarean section showed no correlation between reasons for surgery, duration of surgery, suture material and maternal demographic characteristics. Analysis of the emergency caesareans with wound infections showed that there were 7 cases of superficial wound infection and no cases of sepsis or endometritis. None of the cases had post op pyrexia, wound haematomas, readmission to hospital. Only 3 cases had a clinically significant rise in the white blood cell count - 2 with superficial wound infection and one with a proven UTI with klebsiella org. In all these cases the C-reactive protein (CRP) showed no correlation with clinical signs. 5 of these cases had received intrapartum antibiotics for GBS prophylaxis. Blood culture was negative in both the cases with chorioamnionitis.

Conclusion In emergency and elective caesareans betadine vaginal washing does not have any effect on superficial wound infections. There is a significant reduction in postoperative endometritis and possibly urinary tract infections in elective caesareans. Although it appears pragmatic the practice will not change the incidence of superficial wound infections or urinary tract infections. There is a definite benefit in this practice as none of the women had pelvic infections necessitating longer hospital stay and this has a definite cost benefit in healthcare.

Database: EMBASE

17. Chlorhexidine gluconate versus povidone iodine at cesarean delivery: A randomized controlled trial

Author(s): Kunkle C.M.; Marchan J.; Safadi S.; Whitman S.; Chmait R.H.

Source: Journal of Maternal-Fetal and Neonatal Medicine; Mar 2015; vol. 28 (no. 5); p. 573-577

Publication Date: Mar 2015

Publication Type(s): Article

PubMedID: 24849000

Abstract:Background/Aims: To compare the prevalence of positive bacterial cultures at the cesarean delivery (CD) incision site in patients with pre-operative application of chlorhexidine gluconate (CG) versus povidone iodine (PI). Methods: Women undergoing a scheduled CD at ≥ 36 gestational weeks were randomly assigned to receive CG or PI. A swab of the incision site was performed at 3min after disinfectant application and at 18 post-operative hours, and the prevalence of cultures with any detected bacterial growth was compared for the two groups. Results: Of the 60 participants, 33 (55.0%) were in the PI group. There were no differences detected at 3min, with 9.1% positive in the PI group versus 0% positive in the CG group ($p=0.2499$). However, at 18h, women in the PI group were seven times more likely than women in the CG group to have a positive culture (16/33 [48.5%] versus 3/27 [11.1%], OR=7.53 [95% CI 1.67-38.83], $p=0.0023$). Multivariate logistic regression demonstrated similar results: OR=7.33 (95% CI 1.77-30.35), $p=0.0060$. **Conclusion: The prevalence of positive bacterial cultures obtained at the site of the skin incision 18h after CD was higher in the PI versus the CG group.** Copyright © 2014 Informa UK Ltd.

Database: EMBASE

18. Vaginal preparation with antiseptic solution before cesarean section for preventing postoperative infections.

Author(s): Haas, David M; Morgan, Sarah; Contreras, Karenrose

Source: The Cochrane database of systematic reviews; Dec 2014 (no. 12); p. CD007892

Publication Date: Dec 2014

Publication Type(s): Research Support, Non-u.s. Gov't Meta-analysis Journal Article Review

PubMedID: 25528419

Abstract:BACKGROUND Cesarean delivery is one of the most common surgical procedures performed by obstetricians. Infectious morbidity after cesarean delivery can have a tremendous impact on the postpartum woman's return to normal function and her ability to care for her baby. Despite the widespread use of prophylactic antibiotics, postoperative infectious morbidity still complicates cesarean deliveries.OBJECTIVESTo determine if cleansing the vagina with an antiseptic solution before a cesarean delivery decreases the risk of maternal infectious morbidities, including endometritis and wound complications.SEARCH METHODSWe searched the Cochrane Pregnancy and Childbirth Group's Trials Register (10 December 2014).SELECTION CRITERIAWe included randomized and quasi-randomized trials assessing the impact of vaginal cleansing immediately before cesarean delivery with any type of antiseptic solution versus a placebo solution/standard of care on post-cesarean infectious morbidity.DATA COLLECTION AND ANALYSISWe independently assessed eligibility and quality of the studies.MAIN RESULTSSeven trials randomizing 2816 women (2635 analyzed) evaluated the effects of vaginal cleansing (all with povidone-iodine) on post-cesarean infectious morbidity. The risk of bias was generally low, with the quality of most of the studies being high. Vaginal preparation immediately before cesarean delivery significantly reduced the incidence of post-cesarean endometritis from 8.3% in control groups to 4.3% in vaginal cleansing groups (average risk ratio (RR) 0.45, 95% confidence interval (CI) 0.25 to 0.81, seven trials, 2635 women). The risk reduction was particularly strong for women who were already in labor at the time of the cesarean delivery (7.4% in the vaginal cleansing group versus 13.0% in the control group; RR 0.56, 95% CI 0.34 to 0.95, three trials, 523 women) and for women with ruptured membranes (4.3% in the vaginal cleansing group versus 17.9% in the control group; RR 0.24, 95% CI 0.10 to 0.55, three trials, 272 women). No other outcomes realized statistically significant differences between the vaginal cleansing and control groups. No adverse effects were reported with the povidone-iodine vaginal cleansing.The quality of the evidence using GRADE was low for post-cesarean endometritis, moderate for postoperative fever, and low for wound infection.AUTHORS' **CONCLUSIONS Vaginal preparation with povidone-iodine solution immediately before cesarean delivery reduces the risk of postoperative endometritis. This benefit is particularly realized for women undergoing cesarean delivery, who are already in labor or who have ruptured membranes. As a simple, generally inexpensive intervention, providers should consider implementing preoperative vaginal cleansing with povidone-iodine before performing cesarean deliveries.**

Database: Medline

19. Skin preparation for preventing infection following caesarean section.

Author(s): Hadiati, Diah R; Hakimi, Mohammad; Nurdianti, Detty S; Ota, Erika

Source: The Cochrane database of systematic reviews; Sep 2014 (no. 9); p. CD007462

Publication Date: Sep 2014

Publication Type(s): Research Support, Non-u.s. Gov't Meta-analysis Journal Article Review

PubMedID: 25229700

Abstract:**BACKGROUND**The risk of maternal mortality and morbidity (particularly postoperative infection) is higher for caesarean section than for vaginal birth. With the increasing rate of caesarean section, it is important that the risks to the mother are minimised as far as possible. This review focuses on different forms and methods for preoperative skin preparation to prevent infection.**OBJECTIVES**To compare the effects of different agent forms and methods of preoperative skin preparation for preventing postcaesarean infection.**SEARCH METHODS**We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (26 June 2014) and the reference lists of all included studies and review articles.**SELECTION CRITERIA**Randomised and quasi-randomised trials, including cluster-randomised trials, evaluating any type of preoperative skin preparation agents, forms and methods of application for caesarean section.**DATA COLLECTION AND ANALYSIS**Three review authors independently assessed all potential studies for inclusion, assessed risk of bias and extracted the data using a predesigned form. Data were checked for accuracy.**MAIN RESULTS**We included six trials with a total of 1522 women. No difference was found in the primary outcomes of either wound infection or endometritis. Two trials of 1294 women, compared drape with no drape (one trial using iodine and the other using chlorhexidine) and found no significant difference in wound infection (risk ratio (RR) 1.29; 95% confidence interval (CI) 0.97 to 1.71). One trial of 79 women comparing alcohol scrub and iodophor drape with iodophor scrub without drape reported no wound infection in either group. One trial of 50 women comparing parachlorometaxylenol plus iodine with iodine alone reported no significant difference in wound infection (RR 0.33; 95% CI 0.04 to 2.99). Two trials reported endometritis, one trial comparing alcohol scrub and iodophor drape with iodophor scrub only found no significant difference (RR 1.62; 95% CI 0.29 to 9.16). The other trial of 50 women comparing parachlorometaxylenol plus iodine with iodine alone reported no significant difference in endometritis (RR 0.88; 95% CI 0.56 to 1.38). One trial of 60 women comparing chlorhexidine gluconate with povidone-iodine reported significant lower rates of bacterial growth at 18 hours after caesarean section (RR 0.23, 95% CI 0.07 to 0.70). No difference was found in the secondary outcome of either length of stay or reduction of skin bacteria colony count. No trial reported other maternal outcomes, i.e. maternal mortality, repeat surgery and re-admission resulting from infection. One trial, which was only available as an abstract, investigated the effect of skin preparation on neonatal adverse events and found cord blood iodine concentration to be significantly higher in the iodine group. Most of the risk of bias in the included studies was unclear in selection bias and attrition bias. The quality of the evidence using GRADE was low for wound infection comparing drape versus no drape, one-minute alcohol scrub with iodophor drape versus five-minute iodophor scrub without drape, and parachlorometaxylenol with iodine versus iodine alone. The quality of the evidence for wound infection comparing chlorhexidine gluconate with povidone-iodine was very low.**AUTHORS' CONCLUSIONS** This review found that chlorhexidine gluconate compared with iodine alone was associated with lower rates of bacterial growth at 18 hours after caesarean section. However, this outcome was judged as very low quality of evidence. Little evidence is available from the included randomised controlled trials to evaluate different agent forms, concentrations and methods of skin preparation for preventing infection following caesarean section. Therefore, it is not yet clear what sort of skin preparation may be most efficient for preventing postcaesarean wound and surgical site infection. There is a need for high-quality, properly designed randomised controlled trials with larger sample sizes in this field. High priority questions include comparing types of antiseptic (especially iodine versus chlorhexidine), the

timing and duration of applying the antiseptic (especially previous night versus day of surgery, and application methods (scrubbing, swabbing and draping).

Database: Medline

20. Vaginal cleansing following caesarean section: Are postoperative complications reduced?

Author(s): Birchenall K.; Vanes N.; Engineer N.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2014; vol. 121 ; p. 86

Publication Date: Apr 2014

Publication Type(s): Conference Abstract

Available at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from Wiley Online Library Medicine and Nursing Collection 2017 - NHS

Abstract: Introduction Despite the use of perioperative prophylactic antibiotics, caesarean section (CS) continues to be associated with an increased risk of maternal morbidity when compared with normal vaginal delivery, including increased frequency of endometritis, maternal fever, sepsis and wound infection. Consequently, adjuvant methods for reducing infection have been investigated, including pre-operative vaginal preparation with antiseptic solution. A recent Cochrane review determined vaginal preparation immediately before CS was significantly associated with a reduced incidence of postoperative endometritis, from 7.2% to 3.6%, with a particularly pronounced improvement for women with existing rupture of membranes. At University Hospital Coventry (UHC), a large teaching hospital in the UK, postoperative vaginal cleansing with betadine immediately following skin closure was introduced to the CS protocol in April 2013. Unlike previous studies, we opted for postoperative rather than preoperative cleansing as this would not delay delivery, and would be easily incorporated into the already routine postoperative vaginal swabbing. The aim of this study was to determine if vaginal cleansing following CS reduced postoperative complications. Methods Patients delivered by CS at UHC were identified from theatre records. The first 30 elective and 30 emergency CS performed in May 2012 (group A, n = 60) and May 2013 (group B, n = 60) were selected. Data were then collated from hospital notes, including operative timings, presence of pre-existing rupture of membranes, and any postoperative complications. Results Women from both groups were of similar age, parity, comorbidity status and BMI. All CS performed used a lower uterine segment incision, and there was no significant difference in mean operative duration between groups. For the elective cases, there was no significant difference in incidence of postoperative infection between 2012 and 2013. However, for the emergency cases there was a significant decrease in the number of patients with postoperative endometritis, fever or wound infection (5 versus 2, $P = 0.001$; 95% CI: 1.7-16.2), and a significant decrease in readmission for wound infection (4 versus 0, $P = 0.02$). **Conclusion Although a small study, these findings suggest the previously reported benefits of vaginal cleansing prior to CS remain when performed after delivery. This is important as preoperative cleansing may delay delivery of the baby. The particular improvement observed for emergency cases may be related to an increased prevalence of pre-existing ruptured membranes in those delivered by emergency CS. In summary, our findings indicate that postoperative vaginal cleansing for emergency CS may be as beneficial as preoperative cleansing, and therefore may offer a safer and more practical alternative timing.**

Database: EMBASE

21. Can we reduce the surgical site infection rate in cesarean sections using a chlorhexidine-based antiseptis protocol?

Author(s): Amer-Alshiek, Jonia; Alshiek, Tahani; Almog, Benny; Lessing, Joseph B; Satel, Abed; Many, Ariel; Levin, Ishai

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Nov 2013; vol. 26 (no. 17); p. 1749-1752

Publication Date: Nov 2013

Publication Type(s): Journal Article

PubMedID: 23611598

Abstract:OBJECTIVETo determine whether chlorhexidine-based antiseptis reduces the rate of surgical site infections (SSIs) in elective and non-elective cesarean sections (CS) compared with povidone-iodine protocol.METHODSThis was a retrospective study. Women undergoing elective and non-elective CS during two periods of time who were treated with two different antiseptis protocols were included. The protocols for antiseptis were povidone-iodine 10% scrub followed by 10% povidone-iodine in 65% alcohol (n = 163) and chlorhexidine 2% followed by 70% alcohol (n = 163). The rate of SSIs and the risk factors for their occurrence were calculated and compared between the two groups.RESULTSAntiseptis with chlorhexidine and alcohol was associated with a lower rate of SSIs, 10.43% versus 3.07% with povidone-iodine (p = 0.08). The two groups of patients were similar in baseline characteristics. Risk factors associated with SSIs were body mass index, urgent CS, and the use of the povidone-iodine protocol.CONCLUSIONS Antiseptis with Chlorhexidine-based regimen was associated with a significant reduction in the rate of SSIs compared to povidone-iodine antiseptis in women undergoing elective and non-elective CS. This is of extreme clinical importance, as a change in antiseptis protocol can significantly reduce the morbidity and healthcare costs regarding cesarean sections.

Database: Medline

22. Chlorhexidine-alcohol compared with povidone-iodine for surgical-site antisepsis in cesarean deliveries.

Author(s): Menderes, Gulden; Athar Ali, Nishath; Aagaard, Kjersti; Sangi-Haghpeykar, Haleh

Source: Obstetrics and gynecology; Nov 2012; vol. 120 (no. 5); p. 1037-1044

Publication Date: Nov 2012

Publication Type(s): Comparative Study Journal Article

PubMedID: 23090520

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract:OBJECTIVE To estimate the incidence of surgical-site infection with use of chlorhexidine-alcohol compared with povidone-iodine among women undergoing cesarean deliveries.METHODS This was a retrospective cohort review of 1,000 consecutive cases in women who underwent cesarean delivery over a 1-year interval. The primary outcome was any surgical-site infection within 30 days (Centers for Disease Control and Prevention criterion).RESULTS Mean age and parity were equivalent (29.8 ± 5.9 years; 2.6 ± 1.4). Women were similar regarding baseline characteristics, including acknowledged surgical-site infection comorbidities (body mass index [BMI, calculated as weight (kg)/[height (m)]², gestational diabetes, smoking; $P > .05$). Method of skin incision closure was different, with 91% among povidone-iodine compared with 81% among chlorhexidine-alcohol using staples ($P < .001$). Although the duration of surgical time was higher among chlorhexidine women (67.2 compared with 60.0 minutes; $P < .001$), fewer women in the chlorhexidine group were classified as having undergone an "urgent" cesarean delivery (29% compared with 46%; $P < .001$). Concerning surgical-site infection, the overall rate was similar between the two groups (5% [$n=25$] chlorhexidine and 5.8% [$n=29$] povidone-iodine; $P = .58$). In multivariable analysis and after control for potential confounders, odds for surgical-site infection remained similar between the two groups (adjusted odds ratio 0.74, 95% confidence interval 0.41-1.33; $P = .32$). The only significant predictor of surgical-site infection was duration of cesarean delivery, in which every 1-minute increase in duration increased the odds for infection by 1.3% (adjusted odds ratio 1.013, 95% CI 1.004-1.022; $P = .004$).**CONCLUSION** The single significant predictor of surgical-site infection is operative time. Cleansing with povidone-iodine may be a cost-effective and equally efficacious alternative to chlorhexidine-alcohol among women undergoing cesarean deliveries.LEVEL OF EVIDENCE II.

Database: Medline

23. Does vaginal preparation with povidone-iodine prior to caesarean delivery reduce the risk of endometritis? A randomized controlled trial.

Author(s): Yildirim, Gokhan; Güngördük, Kemal; Asicioğlu, Osman; Basaran, Toygun; Temizkan, Osman; Davas, Inci; Gulkilik, Ahmet

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Nov 2012; vol. 25 (no. 11); p. 2316-2321

Publication Date: Nov 2012

Publication Type(s): Randomized Controlled Trial Journal Article

PubMedID: 22590998

Abstract:OBJECTIVEThe purpose of the present study was to determine whether the vaginal preparation with povidone-iodine prior to caesarean delivery decreased the incidence of postpartum endometritis.METHODSThe present study was a prospective randomized controlled trial in which subjects received a vaginal preparation with povidone-iodine solution immediately prior to caesarean delivery or received no vaginal preparation. The primary outcome measure was the rate of postpartum endometritis.RESULTSA significant decrease in post-caesarean endometritis was noted in the group that received the povidone-iodine vaginal preparation (n = 334) compared with the control group (n = 336) [6.9 vs. 11.6%; RR = 1.69; 95% CI = 1.03-2.76]. No statistically significant differences in the incidence of endometritis were noted between the experimental and control groups among women who were not in labor at the time of the caesarean delivery [9.2 vs. 8.6%; RR = 1.05; 95% CI = 0.58-1.90], and no differences were found between groups when women with ruptured membranes were excluded from the analysis [9.6 vs. 6.7%; RR = 1.39; 95% CI = 0.78-2.47].CONCLUSIONS Vaginal preparation with povidone-iodine solution immediately prior to a caesarean delivery reduces the risk of post-operative endometritis. This preemptive measure was only found to be beneficial in women whose membranes had ruptured and those who were in labor prior to caesarean surgery.

Database: Medline

24. Efficacy of chlorhexidine gluconate versus povidone iodine for skin disinfection at cesarean section: A randomized controlled trial

Author(s): Murray C.; Oppen N.; Yedigiarova L.; Chmait R.; Marchan J.; Safadi S.

Source: American Journal of Obstetrics and Gynecology; Jan 2012; vol. 206 (no. 1)

Publication Date: Jan 2012

Publication Type(s): Conference Abstract

Abstract:OBJECTIVE: Chlorhexidine gluconate (CG) and povidone iodine (PI) are the two most commonly used skin disinfectants. Currently there are no published studies comparing the efficacy of these two agents for cesarean section (C/S). The objective of this study was to compare the incidence of positive bacterial cultures post C/S after preoperative application of CG versus PI. STUDY DESIGN: Gravidas undergoing scheduled C/S at term were randomly assigned to receive CG or PI. A culture swab was taken of the incisional site at 3 minutes and 18 hours after application of the disinfectant, and were placed on mammalian blood-enriched agar with 102 size loop (Agar A) and 103 loop (Agar B) for semiquantitative cultures. The main outcome of interest was the presence of positive bacterial culture. Continuous variables were compared using Mann-Whitney; categorical variables were compared using Chi-Square or Fishers exact tests. RESULTS: The two groups were similar in age, BMI, and past medical history. Of the 30 patients, 13 were randomized to CG and 17 to PI. No differences in positive bacterial culture rates were detected between the two groups at 3 minutes. At 18 hours, positive bacterial cultures were identified in 15% (2/13) in the CG group versus 59% (10/17) in the PI group ($p=.016$) in Agar A, and 0% (0/13) in the CG group versus 41% (7/17) in the PI group ($p=0.008$) in Agar B. **CONCLUSION: The rate of incisional site positive bacterial cultures obtained 18 hours after cesarean section was significantly less in the CG group compared to the PI group. Further study is required to assess if the preoperative use of CG results in a decreased rate of C/S wound infections.**

Database: EMBASE

25. Chlorhexidine-alcohol versus povidone-iodine for surgical site antisepsis in cesarean deliveries

Author(s): Menderes G.; Ali N.; Meredith Klaus L.; Yiu Y.; Sangi-Haghpeykar H.; Aagaard K.

Source: American Journal of Obstetrics and Gynecology; Jan 2012; vol. 206 (no. 1)

Publication Date: Jan 2012

Publication Type(s): Conference Abstract

Abstract:OBJECTIVE: Recent reports have shown the utility of chlorhexidine-alcohol for surgical site antisepsis in nonobstetric cohorts. However, limited data is available concerning the optimal antisepsis among obstetrics patients who comprise of relatively young and healthy women. The aim of the current study was to compare the incidence of surgical site infection (SSI) with use of chlorhexidine-alcohol versus povidone-iodine (a less expensive antisepsis) among women undergoing caesarean deliveries (CD). STUDY DESIGN: A retrospective cohort review was completed among subjects having undergone CD over a 2 year interval. A total of 1000 subjects were identified, 500 with preoperatively povidone-iodine and 500 with chlorhexidine-alcohol. All subjects received perioperative antibiotics. The primary outcome was any SSI within 30 days (CDC criterion). RESULTS: Mean age and parity were equivalent (29.6 ± 5.9 yrs; 2.6 ± 1.4). Subjects were similar on baseline characteristics, including SSI comorbidities (BMI, diabetes, smoking; $p>0.05$). Method of skin incision closure was different with 91% among povidone-iodine vs. 80% in chlorhexidine employing staples ($p<.0001$). Of interest, although the duration of surgical time was higher among chlorhexidine subjects (67.4 vs. 60.1 min., $p<.0001$), fewer subjects in the chlorhexidine group were classified as having undergone an urgent CD (26% vs. 48% $p<.0001$). Despite these differences, the overall rate of SSI was the same in the two groups (5% [$N=25$] in chlorhexidine & 5.8% [$N=29$] povidone-iodine;

p=.53). In multivariate analysis and after control for confounders, odds for SSI remained similar between the two groups (adjusted odds ratio [AOR] = 0.76; 95% CI, 0.42-1.30; p<.34). The single significant predictor of SSI was duration of CD whereby every one min increase in duration of CD, increased the odds for infection by 1.5% (AOR=1.015, 95% CI=1.005-1.024, p=.002). **CONCLUSION: The single significant predictor of SSI is operative time, and cleansing with povidone-iodine may be a cost effective and equivalent alternative to chlorhexidine-alcohol among women undergoing caesarean deliveries.**

Database: EMBASE

26. Effect of preoperative vaginal cleansing with an antiseptic solution to reduce post caesarean infectious morbidity.

Author(s): Memon, Shahneela; Qazi, Roshan Ara; Bibi, Seema; Parveen, Naheed

Source: JPMA. The Journal of the Pakistan Medical Association; Dec 2011; vol. 61 (no. 12); p. 1179-1183

Publication Date: Dec 2011

Publication Type(s): Journal Article Evaluation Studies

PubMedID: 22355962

Abstract:OBJECTIVE To determine the effectiveness of pre operative vaginal cleansing with an antiseptic solution to reduce post caesarean infectious morbidity. METHODS An observational case control study was conducted at Department of Obstetrics and Gynaecology, Unit-III, Liaquat University Hospital, Hyderabad from February to July 2010. The 100 women in control group received the standard abdominal preparation only, while the 100 subjects in interventional group also received preoperative vaginal cleansing with 10% pyodine along with the usual abdominal scrub. All subjects received prophylactic antibiotic cover during the surgery. Maternal demographics, surgical parameters and infectious outcome were collected and data compiled on a pre-designed proforma and analysis was done using SPSS 15. RESULTS The comparison between two groups did not show a significant difference in patient's demographics, labour and surgical variables. Post caesarean endometritis occurred in 1% of case group and 7% of controls (p value: <0.03). There was no measurable effect seen on development of fever and wound infection. However, statistically significant reduction in overall composite morbidity i.e. p value: <0.02 and odds ratio 0.335 (CI=0.125-0.896) was seen in patients with vaginal cleansing group when compared with controls. **CONCLUSION Preoperative vaginal cleansing with pyodine has reduced post caesarean infectious morbidities.**

Database: Medline

27. Preoperative vaginal preparation with povidone-iodine on post-caesarean infectious morbidity.

Author(s): Asghania, M; Mirblouk, F; Shakiba, M; Faraji, R

Source: Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; Jul 2011; vol. 31 (no. 5); p. 400-403

Publication Date: Jul 2011

Publication Type(s): Clinical Trial Journal Article

PubMedID: 21627422

Abstract:The commonest complication associated with caesarean section is infection. The aim of this study is to investigate the effect of vaginal preparation with povidone-iodine on post-caesarean infection. In this clinical trial, 568 patients were selected for two groups: a treatment group and a control group, each with 284 patients. A vaginal scrub was performed before the routine abdominal scrub, with two 4 × 4 cm sponge sticks saturated with povidone-iodine solution, rotated in the vagina for about 30 s. In the control group, only the abdominal scrub was performed. Patients received a single dose of prophylactic antibiotics, and were reviewed for 6 weeks to look for predefined variables. **Post-caesarean endometritis occurred less frequently in the treatment group than in the control group (2.5% vs 1.4%). There was no significant difference for febrile morbidity and wound infection in the two groups. The adjusted odds ratio for endometritis after vaginal preparation was 0.03 (95% CI: 0.008-0.7). Vaginal preparation with povidone-iodine may decrease the risk of post-caesarean endometritis.**

Database: Medline

28. Comparing postcesarean infectious complication rates using two different skin preparations.

Author(s): Weed, Samantha; Bastek, Jamie A; Sammel, Mary D; Beshara, Mathew; Hoffman, Stacey; Srinivas, Sindhu K

Source: Obstetrics and gynecology; May 2011; vol. 117 (no. 5); p. 1123-1129

Publication Date: May 2011

Publication Type(s): Research Support, N.i.h., Extramural Comparative Study Journal Article Evaluation Studies

PubMedID: 21508751

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract:OBJECTIVETo estimate whether a new preoperative skin preparation protocol decreases postcesarean delivery infectious complications.METHODSWe performed a retrospective cohort study. A povidone-iodine (13%) scrub followed by povidone-iodine (10%) paint (SCRUB+PAINT) protocol was compared with standard paint alone (PAINT). Patients and outcomes were identified using diagnosis-related group and International Classification of Diseases, 9th Revision, Clinical Modification coding. Monthly infection rates before the new protocol (October 1, 2007-September 30, 2008) were compared with rates after the protocol (January 1, 2009-December 31, 2009). The primary and secondary outcomes were major puerperal infection and a composite of major puerperal infection and infectious wound complications. Poisson regression was used to model monthly infection rates over time while controlling for confounders known to contribute to infectious risk.RESULTS Data from 2,143 patients (PAINT: n=1,139; SCRUB+PAINT: n=1,004) were included in the analysis. There was no significant secular trend of decreasing infections over time before initiating SCRUB+PAINT (P=.42). SCRUB+PAINT was associated with a decrease in major puerperal infection (3.4 compared with 5.4/100 cesarean deliveries, P=.03) and composite wound infection (5.5 compared with 7.8/100 cesarean deliveries, P=.03) compared with PAINT alone. SCRUB+PAINT resulted in a 38% reduction in major puerperal infection (incident rate ratio 0.62 [0.42-0.93], P=.02) and a 31% reduction in composite wound infection (incident rate ratio 0.69 [0.50-0.96], P=.03) after controlling for confounders and fluctuations in the rates over time.**CONCLUSION** The SCRUB+PAINT protocol is associated with a decrease in the rate of postcesarean delivery infectious complications compared with using povidone-iodine topical paint alone.

Database: Medline

29. Vaginal cleansing before cesarean delivery to reduce postoperative infectious morbidity: a randomized, controlled trial.

Author(s): Haas, David M; Pazouki, Fatemeh; Smith, Ronda R; Fry, Amy M; Podzielinski, Iwona; Al-Darei, Sarah M; Golichowski, Alan M

Source: American journal of obstetrics and gynecology; Mar 2010; vol. 202 (no. 3); p. 310

Publication Date: Mar 2010

Publication Type(s): Randomized Controlled Trial Multicenter Study Journal Article

PubMedID: 20207251

Abstract:OBJECTIVEThe objective of the study was to determine whether vaginal preparation with povidone iodine before cesarean delivery decreased the risk of postoperative maternal morbidities.STUDY DESIGNThe design of the study was a randomized, controlled trial in women undergoing cesarean delivery with subjects assigned to have a preoperative vaginal cleansing with povidone iodine or to a standard care group (no vaginal wash). The primary outcome was a composite of postoperative fever, endometritis, sepsis, readmission, wound infection, or complication.RESULTSThere were 155 vaginal cleansing subjects and 145 control subjects. Overall, 9.0% developed the composite outcome, with fewer women in the cleansing group (6.5%) compared with the control group (11.7%), although the difference was not statistically significant (relative risk, 0.55; 95% confidence interval, 0.26-1.11; P = .11). Length of surgery, being in labor, and having a dilated cervix were all associated with the composite morbidity outcome.**CONCLUSION Vaginal cleansing with povidone iodine before cesarean delivery may decrease postoperative morbidities, although the reduction is not statistically significant.**

Database: Medline

30. Preoperative vaginal preparation with povidone-iodine and the risk of postcesarean endometritis.

Author(s): Starr, Rosally V; Zurawski, Jill; Ismail, Mahmoud

Source: Obstetrics and gynecology; May 2005; vol. 105 (no. 5); p. 1024-1029

Publication Date: May 2005

Publication Type(s): Research Support, Non-u.s. Gov't Comparative Study Randomized Controlled Trial Clinical Trial Journal Article

PubMedID: 15863540

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract:OBJECTIVE Postcesarean endometritis and wound infection remain significant morbidities, despite use of strategies to prevent these complications. We investigated the effect of preoperative vaginal preparation with povidone-iodine as a preventive intervention against postcesarean endometritis and wound infection. METHODSA randomized controlled study was performed in 308 women undergoing nonemergent cesarean delivery. Subjects received either standard abdominal scrub alone or abdominal scrub with an additional vaginal preparation with povidone-iodine solution. All subjects received prophylactic antibiotic at the time of umbilical cord clamping. Each subject's postoperative course was reviewed for development of febrile morbidity (temperature > 38.0 degrees C), endometritis (temperature > 38.4 degrees C accompanied by fundal tenderness occurring beyond the first postoperative day, in the absence of evidence of other infection), and wound infection. RESULTSPostcesarean endometritis occurred in 7.0% of subjects who received a preoperative vaginal preparation and 14.5% of controls (P < .05). There was no measurable effect of a vaginal scrub on the development of postoperative fever or wound infection. The adjusted odds ratio for developing endometritis after a vaginal preparation was 0.44 (95% confidence interval [CI] 0.193-0.997). Multivariate analysis showed an increased risk of developing endometritis in association with severe anemia (adjusted OR 4.26, 95% CI 1.568-11.582), use of intrapartum internal monitors (adjusted OR 2.84, 95% CI 1.311-6.136), or history of antenatal genitourinary infection (adjusted OR 2.9, 95% CI 1.265-6.596). **CONCLUSION Preoperative vaginal scrub with povidone-iodine decreases the incidence of postcesarean endometritis. This intervention does not seem to decrease the overall risk of postoperative fever or wound infection.**

Database: Medline

31. Post-cesarean related infection and vaginal preparation with povidone-iodine revisited

Author(s): Guzman M.A.; Prien S.D.; Blann D.W.

Source: Primary Care Update for Ob/Gyns; 2002; vol. 9 (no. 6); p. 206-209

Publication Date: 2002

Publication Type(s): Article

Abstract: The objective of this study was to ascertain whether vaginal preparation with povidone-iodine before Cesarean delivery would reduce the incidence of post-Cesarean related infection. Participants were randomized to vaginal preparation with either povidone-iodine (n = 80) or saline (n = 80). Post-cesarean related infections included 1) endometritis, defined as fever of $>100.4^{\circ}\text{F}$ on two separate occasions, 6 hours apart, >24 hours postoperatively or $>101^{\circ}\text{F}$ at any time with abdominal/uterine tenderness or 2) cellulitis, defined as advancing erythema around the incision. We calculated overall rates of post-cesarean related infection, relative risk, and 95% confidence intervals for the effect of vaginal preparation. As designed and reported, the trial had at least an 85% power to detect a 30% or greater absolute difference in rates of overall infection (two tailed, $\alpha = 0.05$). There was no significant difference among group demographics (maternal age, parity, anesthesia, labor before current cesarean delivery, number of vaginal examinations during labor, prophylactic antibiotic use, or gestational age at delivery). The post-cesarean endometritis rate was (9.4%). The post-cesarean cellulitis rate was (6.8%). Vaginal preparation with povidone-iodine before Cesarean delivery reduced the rate of post-cesarean endometritis ($P < .04$). The rates of post-cesarean cellulitis between the two groups were similar ($P = .12$). **In our study, vaginal preparation with povidone-iodine before cesarean delivery significantly reduced the incidence of post-cesarean endometritis but not of cellulitis.** © 2002 Elsevier Science Inc. All rights reserved.

Database: EMBASE

32. Vaginal preparation with povidone iodine and postcesarean infectious morbidity: a randomized controlled trial.

Author(s): Reid, V C; Hartmann, K E; McMahon, M; Fry, E P

Source: Obstetrics and gynecology; Jan 2001; vol. 97 (no. 1); p. 147-152

Publication Date: Jan 2001

Publication Type(s): Randomized Controlled Trial Clinical Trial Journal Article

PubMedID: 11152924

Available at [Obstetrics and gynecology](#) - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract:OBJECTIVETo determine whether vaginal preparation with povidone iodine before cesarean decreased the incidence of postpartum infectious morbidity.METHODSParticipants were randomly assigned to vaginal preparation with povidone iodine (n = 247) or no preparation (n = 251). Postpartum infectious morbidity included fever, defined as temperature of 38C or greater after the day of surgery; endometritis, defined as fever with abdominal or uterine tenderness and initiation of intravenous antibiotics; and wound separation, defined as disruption of the abdominal incision that required wound care. We calculated overall rates of postpartum infectious morbidity, relative risks (RR), and 95% confidence intervals (CI) for the effect of vaginal preparation. As designed and reported, the trial had at least 80% power to detect a 10% or greater absolute difference in rates of overall infectious morbidity, fever, and endometritis (two-tailed, alpha = 0.05).RESULTSThere was no difference between groups in maternal age, parity, race, education, prior cesarean, type of anesthesia, labor before current cesarean, number of vaginal examinations during labor, internal monitoring, prophylactic antibiotic use, gestational age at delivery, or payment status. Excluding 68 women with chorioamnionitis, incidence of postoperative fever was 19.3%, endometritis 7.2%, and wound separation 7.0%. Vaginal preparation with povidone iodine before cesarean had no effect on risk for fever (RR 1.1, 95% CI 0.8, 1.6), endometritis (RR 1.6, 95% CI 0.8, 3.1), or wound separation (RR 0.6, 95% CI 0.3, 1.3).CONCLUSION **Vaginal preparation with povidone iodine before cesarean had no effect on the incidence of fever, endometritis, or wound infection.**

Database: Medline

33. Preoperative skin preparation and intraoperative pelvic irrigation: impact on post-cesarean endometritis and wound infection.

Author(s): Magann, E F; Dodson, M K; Ray, M A; Harris, R L; Martin, J N; Morrison, J C

Source: Obstetrics and gynecology; Jun 1993; vol. 81 (no. 6); p. 922-925

Publication Date: Jun 1993

Publication Type(s): Research Support, Non-u.s. Gov't Comparative Study Randomized Controlled Trial Clinical Trial Journal Article

PubMedID: 8497357

Abstract:OBJECTIVETo determine the impact of two skin preparation methods and two techniques of pelvic irrigation on the incidence of post-cesarean endometritis and wound infection in an indigent patient population.METHODSA randomized study was performed in 100 cesarean patients. Subjects were assigned to one of four groups, involving either standard skin preparation (povidone-iodine [7.5%] scrub followed by povidone-iodine [10%] solution) or special skin preparation (5-minute scrub with parachlorometaxlenol followed by povidone scrub and solution), and either normal saline or antibiotic (cefazolin sodium, 1 g in 500 mL normal saline) irrigation of the pelvis and subcutaneous tissue at uterine and fascial closure. Four groups of patients were formed: standard skin preparation plus normal saline irrigation, standard preparation plus antibiotic irrigation, special preparation plus normal saline irrigation, and special preparation plus antibiotic irrigation.RESULTSEndometritis occurred significantly more often in the combined groups that did not include antibiotic irrigation than in the combined groups involving antibiotic irrigation ($P < .001$). In contrast, comparison of skin preparation methods between povidone-iodine alone versus preparation including parachlorometaxlenol indicated no significant difference ($P = .22$).CONCLUSION Skin preparation with an antibacterial scrub in addition to standard povidone-iodine scrub and solution does not appear to play as significant a role in the reduction of post-cesarean endometritis or wound infection as does intraoperative pelvic irrigation with antibiotic solution.

Database: Medline

Strategy 285952

#	Database	Search term	Results
1	Medline	("Puerperal sepsis").ti,ab	479
2	Medline	exp "PUERPERAL DISORDERS"/	30401
3	Medline	exp SEPSIS/	107960
4	Medline	(2 AND 3)	630
5	Medline	("maternal sepsis").ti,ab	99
6	Medline	(postpartum ADJ2 sepsis).ti,ab	110
7	Medline	exp "PUERPERAL INFECTION"/	3063
8	Medline	(3 AND 7)	410
9	Medline	exp "PREGNANCY COMPLICATIONS, INFECTIOUS"/	40877
10	Medline	(3 AND 9)	1901
11	Medline	(1 OR 4 OR 5 OR 6 OR 8 OR 10)	2579
12	Medline	(iodine).ti,ab	42574
13	Medline	exp IODINE/	23926
14	Medline	(12 OR 13)	52861
15	Medline	(11 AND 14)	1
16	Medline	(3 AND 14)	115
17	EMBASE	("Puerperal sepsis").ti,ab	518
18	EMBASE	exp "PUERPERAL INFECTION"/	2643

19	EMBASE	exp SEPSIS/	223864
20	EMBASE	(18 AND 19)	424
21	EMBASE	("maternal sepsis").ti,ab	168
22	EMBASE	(postpartum ADJ2 sepsis).ti,ab	108
23	EMBASE	(17 OR 20 OR 21 OR 22)	1070
24	EMBASE	(iodine).ti,ab	52407
25	EMBASE	exp IODINE/	39883
26	EMBASE	(24 OR 25)	72438
27	EMBASE	(23 AND 26)	0
28	EMBASE	exp IODINE/	39883
29	EMBASE	(19 AND 26)	363
30	EMBASE	exp "PREGNANCY COMPLICATIONS, INFECTIOUS"/	124190
31	EMBASE	(26 AND 30)	441
32	EMBASE	(19 AND 31)	1
33	EMBASE	exp "SEPTIC SHOCK"/ OR exp 59816 SEPTICAEMIA/	
34	EMBASE	(28 AND 33)	28
35	EMBASE	exp "POVIDONE IODINE"/	9122
36	EMBASE	(23 AND 35)	1
37	EMBASE	(19 AND 35)	485
38	EMBASE	exp "CESAREAN SECTION"/	82911
39	EMBASE	(35 AND 38)	126

40	EMBASE	exp LABOR/	36854
41	EMBASE	(35 AND 40)	14
42	Medline	("POVIDONE IODINE").ti,ab	2644
43	Medline	exp "POVIDONE-IODINE"/	2555
44	Medline	(42 OR 43)	3565
45	Medline	(11 AND 44)	0
46	Medline	(7 AND 44)	7
47	Medline	(caesarean* OR cesarean*).ti,ab	50971
48	Medline	exp "CESAREAN SECTION"/	39999
49	Medline	(47 OR 48)	63357
50	Medline	(44 AND 49)	43
51	Medline	(childbirth OR birth* OR labour OR labor OR delivery).ti,ab	656745
52	Medline	exp "DELIVERY, OBSTETRIC"/	71162
53	Medline	(51 OR 52)	687738
54	Medline	(44 AND 53)	123
55	Medline	(betadine).ti,ab	460
56	Medline	(53 AND 55)	14
57	Medline	(49 AND 55)	4
58	EMBASE	(betadine).ti,ab	684
59	EMBASE	(38 AND 58)	15
60	EMBASE	exp "OBSTETRIC DELIVERY"/	126512

61	EMBASE	(58 AND 60)	19
62	EMBASE	(35 AND 60)	156
63	PubMed	(caesarean* OR cesarean*).ti,ab	64008
64	PubMed	(childbirth OR birth* OR labour OR labor OR delivery).ti,ab	1691245
66	PubMed	((PUERPERAL OR maternal OR postpartum) ADJ2 (sepsis OR septic* OR infect*)).ti,ab	4723
67	PubMed	(63 OR 64 OR 66)	1699935
68	PubMed	("POVIDONE IODINE" OR iodine OR betadine).ti,ab	110524
69	PubMed	(67 AND 68)	4265
70	PubMed	(63 AND 68)	111
71	PubMed	(64 AND 68)	4248
72	PubMed	(66 AND 68)	13
73	Medline	(14 AND 49)	75
74	EMBASE	(26 AND 38)	125
75	EMBASE	(endometriosis).ti,ab	28555
76	EMBASE	exp ENDOMETRIOSIS/	32900
77	EMBASE	(75 OR 76)	35489
78	EMBASE	(35 AND 77)	15
79	EMBASE	(30 AND 35)	21
80	EMBASE	(metrophlebitis).ti,ab	1
81	EMBASE	exp "BACTERIAL PERITONITIS"/	6170

82	EMBASE	(35 AND 81)	9
83	EMBASE	exp "INTRAUTERINE INFECTION"/	6974
84	EMBASE	(35 AND 83)	4
85	Medline	(endometriosis).ti,ab	19444
86	Medline	exp ENDOMETRIOSIS/	19339
87	Medline	(85 OR 86)	24095
88	Medline	(44 AND 87)	2
89	Medline	exp "VAGINAL DOUCHING"/	298
91	Medline	(vagina* ADJ2 (douching OR cleansing OR disinfect*)).ti,ab	319
92	Medline	(89 OR 91)	534
93	Medline	(44 AND 92)	33
94	EMBASE	exp "VAGINAL DOUCHING"/	728
95	EMBASE	(vagina* ADJ2 (douching OR cleansing OR disinfect*)).ti,ab	342
96	EMBASE	(94 OR 95)	936
97	EMBASE	(35 AND 96)	42