Effect of ice therapy on post partum perineal pain and wound condition

Sheila Klimczyk

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EFFECT OF ICE THERAPY ON POST PARTUM PERINEAL PAIN
AND WOUND CONDITION

By

Sheila Klimczyk R.N, R.M.

A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of

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Effect of ice therapy on post partum perineal pain and wound condition

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ABSTRACT

The application of ice to the perineal wound is a common treatment in the post partum period. There is little research available that evaluates the efficacy of ice therapy. This study examined the effects of ice therapy on the perineal wound in the first 24 hours post partum. An experimental design was used to test the hypothesis that the application of ice to the perineal wound, in the first 24 hours post partum, produces a significant reduction in reported pain and use of oral analgesia, and improvement in wound condition. A convenience sample of 58 post partum women from a non-teaching, metropolitan, public hospital were randomly assigned to one of two groups. The experimental group, in addition to the normal hospital routine, had icepacks applied to the perineum at four-hourly intervals in the first 24 hours post delivery. The control group underwent normal post partum care, without the application of ice. A horizontal visual analogue scale was used to assess reported pain levels. The redness, oedema, ecchymosis, discharge, and approximation of skin edges (R.E.E.D.A.) tool was used to assess wound condition at one hour and twenty-four hours post partum.
A T-test procedure was used to analyse the reported pain levels. Analysis of covariance was used to evaluate the R.E.E.D.A. scores. A significance level of $p < .05$ was set for all procedures. The results of the study indicate that ice therapy significantly improves the condition of the perineal wound in the first 24 hours post partum, but has no effect on reported pain levels. The implication for nursing is that ice is recommended as an effective treatment of post partum perineal wounds.
"I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text."
I wish to thank my supervisor, Mr David Shorten, for his invaluable advice, assistance, and encouragement during the course of this study. I would also like to extend my gratitude to Athalie Johnston and Christina Sherman who assisted in data collection, and to Amanda Blackmore for her help with the statistical analysis. My thanks also to the midwives and obstetricians of Osborne Park Hospital for supporting the research and allowing the study to be conducted in the hospital. Finally, I would like to thank my husband and my friends for their patience and support over the past year.
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Perineal pain is the most common cause of distress and discomfort post-natally. Most women report some level of discomfort following episiotomy with some finding the pain severe. Unfortunately, alleviation of post partum perineal pain has been a subject largely neglected by researchers.

Many different methods are employed to relieve perineal discomfort and improve wound condition. One of these methods is the application of ice to the perineal wound. Ice therapy is a common post partum practice in many institutions, including the researcher's place of employment. However, there is little information in the research literature which evaluates the efficacy of ice therapy. Past studies have revealed inconsistencies and conflicting results. The purpose of this study was to determine whether the application of ice to the perineal wound in the first 24 hours post-partum, produces a significant reduction in reported pain, and improvement in wound condition.

Literature Review

A review of the literature revealed that few studies have been conducted to evaluate the effect of cold versus heat for the relief of perineal pain and only one of the studies adequately evaluated the effect on wound condition. The effect of ice therapy has been studied in associated fields, for example, in the treatment of sporting injuries, and, as the results have some relevance to this subject, they have also been included in the literature review.
Research into the efficacy of oral analgesics and other local preparations such as corticosteroids and local anaesthetics has also been included in this review.

**Perineal Pain**

Perineal pain is the most common cause of distress and discomfort postnatally (Kempster, 1987). Many women report severe perineal pain in the post partum period (Reading, Sledmere, Cox & Campbell, 1982). If perineal trauma, either episiotomy or laceration, has been sustained, the resultant pain can be a major problem to the new mother (Grant & Sleep, 1989). Nodine and Roberts (1987) found that only 17.8% of clients retained intact perineums following delivery, the remaining clients sustaining either episiotomy or lacerations.

Harrison, Brennan, Reed & Wickham (1987) conducted a randomised trial involving 181 patients, to assess post partum pain, oedema, and bruising in the first four days following delivery. They found that, on the first day post partum, 93% of patients who had sustained an episiotomy (without epidural analgesia) reported mild to severe pain. In comparison, only 81% of patients sustaining second degree tears, and 58% of those with intact perineums reported no more than a moderate level of pain. Of those patients who sustained an episiotomy, 35% still reported some pain on the fourth day post partum as opposed to only 5% of those with intact perineums. Perineal pain appears to
be both a nuisance and a hindrance to the majority of post partum patients, who are trying to care for a new baby.

**Oral Analgesics**

Many studies have been conducted to evaluate the effects of different analgesic agents including codeine, aspirin, paracetamol, ibuprofen, and propoxyphene. Each of these has been found to be effective to varying degrees (Harrison et al., 1987). One study conducted by Taina (1987) compared ibuprofen against a placebo in the relief of perineal pain. Thirty subjects were studied, half received ibuprofen 400mg. six hourly, the other half received a placebo (lactose), with no other analgesic or anti-inflammatory drugs being given for seven days post partum (the duration of the trial). The results showed that ibuprofen was effective not only in reducing reported pain, but also in reducing oedema of the perineal wound.

Studies have shown that the majority of post partum women (92.3%) used a combination of aspirin and codeine, either with or without paracetamol. The second preference was paracetamol alone, with 1.7% of women choosing to use it (Harrison et al., 1987).

The subject of research into the efficacy of oral analgesics in the relief of perineal pain is vast and cannot be fully dealt with in this paper. However, it is an important subject to mention because of the unwanted side effects that oral analgesia may have, particularly in making the mother feel drowsy. This may then have a two
fold effect. The mother may be unable to adequately care for her baby, and, because these drugs are excreted in the breast milk, babies of breast feeding mothers will also be affected by the drugs. Both of these effects are undesirable.

It is therefore important to find an efficient method of treating perineal pain without unwanted side effects. For this purpose ice is ideal as it will produce no systemic effects at all.

**Local Anaesthetic and Corticosteroid Preparations.**

Goldstein et al. (1977) compared the effect of two local agents, one a foam containing a steroid plus local anaesthetic, the other a spray containing an antiseptic plus local anaesthetic. They found that the foam produced the most effective relief of pain and reduction of oedema. However the subjects in the study also used sitz baths and witch hazel compresses which may have influenced the results.

Harrison and Brennan (1987) conducted two studies to evaluate different local anaesthetic sprays. The first study compared lignocaine and cichocaine, and showed that lignocaine was more effective. The second study compared aqueous and alcoholic preparations of the same agents, and found that the aqueous preparation of lignocaine was most effective. Harrison and Brennan (1987) then went on to compare lignocaine spray with mefenemic acid taken orally, finding that aqueous lignocaine spray gave similar pain
relief as mefenemic acid, although for a shorter duration.

The Drug and Therapeutics Bulletin (May 1987) report on a study by the manufacturer of a hydrocortisone and pramoxine foam, combining corticosteroid and local anaesthetic. The foam was compared against witchhazel and icepacks. The results showed that the foam was effective very quickly but the reported pain relief was similar to that of icepacks, with witchhazel being less effective. The recommendation put forward was that there was no value in using the foam because of its expense when icepacks were as effective in reducing pain.

One common side effect in all studies was reported stinging on the perineum after application of the spray or foam.

**Sitz Baths**

Sitz baths are widely used in the treatment of perineal wounds. Traditionally warm sitz baths have been used to relieve perineal pain and improve wound condition. However, Droegemueller (1980) became interested in the use of ice as an analgesic, when he noticed that athletic trainers were using ice instead of heat for the treatment of soft tissue injuries. He conducted a study, using a within subjects design, on post-episiotomy women taking alternate hot and ice cold sitz baths for 24 hours and comparing the levels of reported pain. His results showed that ice sitz baths produced pain relief for four to six hours although they were uncomfortable initially, whereas the warm sitz baths
produced only temporary pain relief. Droegemueller reports a reduction in oedema and haematoma formation on the perineum with the use of ice sitz baths, however, he does not state how this was measured.

In Droegemueller’s report of his study he fails to document how the temperature of the sitz baths was controlled or measured. Neither does he state what instrumentation was used to assess the condition of the perineum. There is no mention of how the data were analysed, therefore it is difficult to assess the accuracy of the results.

Ramler and Roberts (1985) conducted a similar study also using a within subjects design. The sample consisted of 40 women who had had an episiotomy. They made one improvement to Droegemueller's design by controlling the temperature of both the warm and cold sitz baths using a bath thermometer, to ensure uniformity of treatment. Their results indicate that the cold sitz baths produced greater pain relief than the warm baths. However, they found that the duration of pain relief did not vary according to treatment. They identify the omission of examining the condition of the perineum as a limitation of their research, and advise that measurement of the appearance of the perineal wound be included in future studies.

The results of the Ramler and Roberts study in 1985 concurred with those of Droegemueller (1980) in that cold sitz baths produced greater pain relief, however they did
not agree that the duration of pain relief was any longer than when warm sitz baths were taken.

Sleep and Grant (1988) conducted a study to compare sitz baths with no additive, with savlon added or with salt added. They concluded that there was no benefit in adding anything to the water of the sitz baths, since there was no significant difference in the level of reported perineal pain or wound condition after 10 days.

Lafoy and Geden (1989) used a repeated measure experimental design to assess the effects of warm sitz baths compared to cold sitz baths in the relief of episiotomy pain postnatally. They concluded that there was no significant difference between treatments in the effect on sensation, distress, and haematoma levels. These results conflict with previously conducted studies, which had found that cold produces more effective pain relief than heat. However, cold sitz baths were more effective in the reduction of oedema, a finding which corresponds with the results of Droegemueller (1980). Lafoy and Geden (1989) identified several limitations to their study. The sample consisted of only 20 women who had sustained an episiotomy during labour. The subjects all had icepacks applied to the episiotomy wound in the recovery room, which may have affected the results. Finally, the most significant limitation was that they do not mention how many nursing staff were actually rating the condition of the perineal wound. If more than one nurse was involved then interrater
reliability may have been low. One of the strengths of this study is that all measures, that is, condition of the perineal wound and subjective pain assessment, were taken prior to and immediately following each treatment.

In 1983, Barclay and Martin conducted a study primarily to research the efficacy of a topically applied witch hazel solution in the relief of perineal pain. One of the comparative treatments was the use of iced sitz baths, therefore it is included in this review. One hundred and forty one postnatal women who had sustained an episiotomy were randomly assigned to one of five treatment groups. The treatments used were warm sitz baths, iced sitz baths, ray lamp, no treatment, or witch hazel solution. The four aspects of the treatments that were measured were subjective perception of pain, healing, infection, and analgesic use. The results showed no difference in healing time or evidence of infection between treatment groups, but did support earlier findings of Droegemuller (1980) that iced sitz baths produce more effective pain relief than other treatments. It is unclear whether the temperature of the sitz baths was controlled. They also state that salt was added to the water used in the sitz baths but do not include it as an influencing factor in the results.

Ice Therapy

In Sporting Injuries

In athletic injuries such as ankle sprain, ice therapy has been found to be beneficial in reducing swelling and
relieving pain. Hocutt (1982) found that cold treatment applied in the first thirty-six hours after injury significantly reduced recovery time as opposed to use of heat treatment. Cote, Prentice, Hooker and Shields (1988) also found that the use of cold therapy for ankle sprain resulted in less oedema than the use of heat treatment.

In a study examining the effects of ice therapy on joint inflammation in chronic arthritis (Bulstrode, Clarke & Harrison, 1986) ice therapy was administered to fifteen knee joints, while a further fifteen acted as a control. The variable being studied was inflammation or swelling of the joint. There was no significant reduction in swelling with the use of ice, but, the subjects reported a decrease in pain after application of icepacks.

In Obstetrics

As early as 1961 Pinkerton and Beard reported that the use of ice packs applied to the episiotomy wound at approximately three-hourly intervals resulted in less oedema and inflammation 24 hours after delivery. They also report that only 14% of women found the wound painful or very painful if ice packs were used, as opposed to 40% if no ice was used. However one limitation of this study is that there is no report of instrumentation or data analysis.

As previously mentioned, Droegemueller (1980) found that ice in the form of ice cold sitz baths as opposed to icepacks was more beneficial than heat in providing
analgesia from perineal pain. Although the results of Ramler and Roberts (1985) did not completely concur with those of Droegemueller (1980), they did agree that cold sitz baths produced greater pain relief. The discrepancy may be due to the fact that Ramler and Roberts (1985) did not use ice cold water. The temperature of the cold sitz bath used in their study was between 15.6 - 18.3 degrees centigrade.

Both Ramler and Roberts (1985) and Droegemueller (1980) state that it is important to observe wound condition as well as analgesia produced by the use of cold or ice. Barclay and Martin (1983) and Lafoy and Geden (1989) did observe the condition of the perineal wound in response to treatment applied. Both parties devised their own scales to perform this measurement, but do not give any details of reliability or validity.

Hill (1988) utilized the redness, (o)edema, ecchymosis, discharge, and approximation of skin edges (R.E.E.D.A.) tool, devised by Davidson in 1974, to assess the condition of the perineum in a study comparing three treatments, either a cold pack, warm pack or warm sitz baths. All treatments were a once-only application for twenty minutes during the first 24 hours after delivery. The conclusion of this study was that there was no difference in the condition of the perineum between the three treatments, a finding that does not support the earlier conclusions of Droegemueller (1980), Barclay and Martin (1983), Ramler and
Roberts (1985), or Lafoy and Geden (1989). Some limitations of this study are the relatively small sample size, the once only application of treatment and the failure to check the temperature of the cold and warm packs, both of which were manufactured. Hill (1988) also states that the subjects rated their level of pain before and after treatment, again with no significant difference being found, but fails to document what instrumentation was used.

Both Droegemueller (1980) and Ramler and Roberts (1985) point out that, although ice sitz baths may be more beneficial than warm ones, they are unappealing to the client, with 58 out of 119 women, who refused to participate in the Ramler and Roberts study, stating that they would not take a cold sitz bath even if they were in severe pain. Cold packs seem to be more appealing to the clients according to both Droegemueller (1980) and McLean (1989), who state that the most efficient material to use in a cold pack is ice, as opposed to manufactured gels and chemicals. Sleep and Grant (1988) found the preferred choice of local treatments, by midwives, was ice, with 84% of all obstetric units surveyed using ice, followed by 60% of units using a hydrocortisone foam.

**Summary.**

Although ice therapy is a popular method of treatment in the relief of perineal pain and improving wound condition after episiotomy or lacerations, it appears that its use or efficacy is not supported by the research
evidence available. Ice therapy is used with success in the treatment of soft tissue injuries in athletics to reduce swelling and relieve pain. It seems appropriate to draw a comparison between soft tissue injuries and perineal trauma suffered during childbirth, and therefore assume that the use of ice would be beneficial in providing analgesia and improving wound condition when perineal injury has occurred intrapartum.

The present results are inconsistent. Droegemueller (1980), Pinkerton and Beard (1961), Barclay and Martin (1983), and Ramler and Roberts (1985) agree that ice or cold produces better analgesia than heat, but Hill (1988) and Lafoy and Geden (1989) found no significant difference between the use of ice and heat in the relief of perineal pain.

With the exception of Ramler and Roberts (1985), and Hill (1988) all the researchers report a decrease in oedema and haematoma formation with the use of ice either as an icepack or in the form of a sitz bath. However, only Hill (1988) accurately describes the instrumentation used to assess the condition of the perineum.

Although much of the research supports the conclusion that ice or cold therapy is beneficial in the care of the perineum postnatally, there are still enough inconsistencies in the results available to warrant further research in this area.
Conceptual Framework

When an injury to tissue occurs, cells are destroyed releasing chemical agents, histamine and plasma kinins, which cause an increase in blood flow and permeability of the cell membrane leading to extracellular oedema. This oedema produces an increased pressure in the surrounding tissues which is thought to cause pain (Nehme & Warfield, 1987) (Figure 1).

The production of analgesia by means of cold therapy has been recognised for centuries, although the exact mechanism of action is not fully understood. Many theories have been studied including nerve damage, production of local autoantibodies, and production of ischaemic necrosis (Nehme & Warfield, 1987). Application of cold to a wound will cause vasoconstriction, resulting in decreased blood flow thus reducing the supply of oxygen and metabolites to the affected area. Cold also decreases capillary permeability preventing escape of fluid from the cells to the tissues, thereby controlling oedema and lessening pain. Cold is also thought to reduce nerve activity, resulting in reduced muscle spasm and contractility, also lessening pain (Kozier & Erb, 1987, p.1580).

Cold can also have adverse effects resulting in impaired circulation leading to tissue damage from lack of oxygen and nutrients, especially with prolonged use. (Kozier & Erb, 1987, p.1581).
PERINEAL INJURY

CELL DESTRUCTION

RELEASE OF HISTAMINE

RELEASE OF PLASMININS

UNTREATED

TREATED WITH ICE THERAPY

1. INCREASED BLOOD FLOW

2. INCREASED CAPILLARY PERMEABILITY

1. DECREASED BLOOD FLOW

2. DECREASED CAPILLARY PERMEABILITY

3. DECREASED NERVE ACTIVITY

1. HAEMORRAGE

2. EXTRACELLULAR OEDEMA

1. CONTROL OF HAEMORRAGE

2. DECREASED OEDEMA

3. REDUCED MUSCLE SPASM

INCREASED PRESSURE

DECREASED PRESSURE

PAIN

ANALGESIA

Figure 1

Effect of Ice Therapy on Perineal Injury
The use of cold has a two-fold effect. Firstly, it reduces bleeding and oedema by means of vasoconstriction and slowing of metabolic rate, thereby improving wound condition. Secondly, it provides local analgesia, partly due to reduction in oedema, but also due to decrease in muscle spasm and damage to nerve endings thereby slowing impulses to the brain.

Method

Approval to conduct this study was obtained from the School of Nursing ethics committee of the Western Australian College of Advanced Education, the participating hospital, and the medical staff responsible for the clients' care.

Sample and Setting

The study was conducted in a non-teaching public hospital in the metropolitan area of Perth, averaging approximately 1,200 deliveries a year.

A convenience sample of 58 post partum women who met the selection criteria, and who gave consent were chosen for the study. All women meeting the selection criteria were invited to participate in the study. Selection criteria included post partum women who had sustained either/or:
1. episiotomy
2. first degree tear
3. second degree tear
Excluded from the study were women:

1. sustaining third degree tear
2. sustaining lacerations requiring suturing under general anaesthetic
3. requiring Keillands rotational forceps delivery
4. requiring breech delivery
5. sustaining post-partum haemorrhage i.e. blood loss in excess of 600mls.
6. who were non-English speaking

These exclusions were made because the risk of severe perineal damage, requiring specialised treatment, is high in the named situations. Non-English speaking women were excluded because they were unable to give informed consent.

**Design**

An experimental design was used for the study. Three hypotheses were tested:

1. The application of ice to the perineal wound at four-hourly intervals for the first 24 hours post-partum will significantly improve the condition of the wound.
2. The application of ice to the perineal wound at four hourly intervals for the first 24 hours post partum will result in a significant decrease in the level of pain reported by the client.
3. The use of locally applied ice four-hourly for the first 24 hours post partum will significantly decrease the amount of oral analgesia required.
The independent variable in this study was the use of ice, with the dependent variables being the condition of the perineal wound, the level of reported pain, and the amount of pain medication required.

**Instrumentation**

Scott and Huskisson (1976) studied various types of pain rating scales and advise that only two scales, the visual analogue and graphic rating scales used horizontally, are reliable and valid, although they do not give any statistical evidence in support. In this study the researcher chose to use a horizontal visual analogue scale consisting of a horizontal line, 10 cm. long, with the words "no pain" at one end, and "severe pain" at the other (Appendix B), based on those scales devised by Scott & Huskisson (1976). In later studies, correlations of between 0.782 to 0.914 have been reported between visual analogue scales, numerical rating scales, and simple descriptive scales, indicating that visual analogue scales are valid and reliable measurements of pain levels (Downie, Leatham, Rhind, Wright, Branco, & Anderson, 1978).

The redness, (o)edema, ecchymosis, discharge and, approximation of skin edges (R.E.E.D.A.) tool devised by Davidson in 1974 was used to evaluate the condition of the perineum (Appendix C). No reliability or validity measures are given for this tool, although it has been used with success by Hill (1988).
Prior to commencement of this study, interrater reliability for the use of the R.E.E.D.A. tool was assessed using the Pearson correlation coefficient. Two experienced midwives working in the birth suite volunteered to assist with data collection. The researcher examined five traumatised perineums with each of the two assistants separately. Correlations of .98 and .99 were obtained with each assistant respectively. This indicated that interrater reliability was very high in the use of this particular tool. During the study, the one hour and 24 hour inspection of the perineal wound was generally carried out by the same rater. The researcher collected data on 24 occasions. The two assistants collected data from 18 and 16 clients respectively.

Procedure

All clients admitted to the birth suite during the course of the study were invited to participate, having been given the information sheet (Appendix A) on admission. If consent was obtained, allocation to treatment group was made after delivery of the baby, when it was known whether a perineal injury had occurred. Randomization was achieved by allocation of the first subject to treatment group by the flip of a coin, and then alternating groups thereafter. As each client was allocated to treatment group, the details were recorded in a register kept in a locked file in the birth suite, accessed only by the researcher and assistants. Subsequently, participants in the research were
identified only by a number recorded on all relevant documentation. By adhering to these precautions, confidentiality of the participants was maintained.

A pilot study, consisting of ten women who met the selection criteria, was conducted prior to commencement of this study, in order to assess the reliability of the instruments being used.

The experimental group (n=29) had ice packs applied to the perineum one hour following suturing, then at four-hourly intervals for 24 hours. The control group (n=29) had no ice packs applied. Both groups had access to other standard post partum care provided by the hospital.

The ice packs used in the pilot study were made by filling finger cots with water, securing the end, then freezing. They were then stored in the freezer compartments of the refrigerators in either the birth suite or the post-natal ward. As application of ice directly on to human tissue may cause damage and necrosis, the ice packs were covered by one layer of gauze prior to application.

Grant and Sleep (1989) report of some fears that the application of a solid piece of ice to the perineal tissues may carry a higher risk of causing "ice-burn", compared to using crushed ice. They recommend that the crushed ice is applied between the layers of a perineal pad. For this reason, during the main study, the ice packs used were manufactured plastic sachets of normal saline measuring 10cms. by 5cms. which were frozen and stored in the same
manner as the finger cot ice packs. Prior to application these sachets were crushed so that the ice was no longer in a solid piece. In both instances, midwives were instructed fully in the correct application of the ice packs.

Upon applying each ice pack the midwives signed the data collection sheet (Appendix D), kept in the client's file by the bedside, to ensure that an accurate record was kept of all treatments.

The following demographic data were also collected and recorded on the data collection sheet:

1. age of subject
2. parity
3. type of delivery
4. amount of blood loss prior to suturing
5. weight of baby
6. other forms of treatment used e.g. sitz baths, ultrasound

The perineum was inspected at one hour after suturing, prior to application of the first ice pack, and then at 24 hours post-partum, either by the researcher or an assistant. Ideally, to minimize experimenter bias and enhance internal validity, the person inspecting the perineum, using the R.E.E.D.A. tool, should have been blind to which group the client was allocated. However, due to limitations in resources this was beyond the scope of this study. Therefore, there may be some degree of experimenter bias present since it was impossible to prevent the
treatment group assigned to the client being known to the researcher and assistants.

To inspect the perineum, the client was asked to lie on her left side with knees drawn up, adequate privacy and a good light source having been assured. A four centimetre long paper tape measure was placed with its midpoint over the suture line, then the amount of redness, oedema and ecchymosis (or bruising) on either side of the suture line was measured, with discharge and approximation of skin edges being documented as on the R.E.E.D.A. scale.

The visual analogue scale was given to the subjects at 24 hours post-partum when the researcher visited to inspect the perineum. To minimize experimenter bias, a written explanation of how to complete the visual analogue scale was provided. No verbal encouragement was given to the client and the scale was completed in private.

The amount (number of times administered) and type of oral analgesia taken in the first 24 hours was noted from the client's medication chart. The data collection sheet was also collected at this time, on which all demographic data was recorded as well as details of application of ice packs, and any other form of treatment used over the first 24 hours.

The researcher was aware that the experimental group may have received more attention from staff than the control group, a fact which could have influenced the reported pain results. Both groups, however, received the
same amount of attention from the researcher or assistant when the perineum was inspected, the extra attention was received by the experimental group when the ice packs were applied. However, the control group still received attention at approximately four hourly intervals, when staff gave assistance with feeding the baby.

Assumptions
1. Midwives in birth suite would be supportive of the study.
2. Midwives would call researcher or assistant to assess perineal wound after suturing.
3. Midwives would be accurate in recording application of ice packs and amount of oral analgesia used.
4. Women would be honest in reporting level of discomfort felt over the first 24 hours.
5. Women would be honest in reporting any other methods of relief used in the first 24 hours.

Operational Definitions
Pain—physical pain arising from tissue damage to the perineum causing stimulation of the pain receptors, reported by the patient as an alteration in comfort (Merck Manual, 1982, p.1293). A highly personal sensation which may be described differently by each patient. (Kozier & Erb, 1987, p.1116).
Perineum—The area extending from the pubic arch to the coccyx, with the underlying tissues. (Da Cruz & Adams, 1976, p.112)
Episiotomy—An incision of the perineum and vagina that enlarges the introitus. (Beischer & Mackay, 1978, p.5)

1st. degree tear—A perineal laceration involving only the skin of the fourchette exposing the underlying muscle.

2nd. degree tear—A perineal laceration involving the posterior vaginal wall and perineal muscle. (Llewellyn-Jones, 1986, p.372)

3rd degree tear—A perineal laceration passing through the anal sphincter and laying open the anal canal. (Beischer & Mackay, 1978, p.10)

Wound condition—appearance of the perineal wound in terms of redness, oedema, discharge, ecchymosis, and approximation of skin edges as measured using the R.E.E.D.A. tool.

Ethical Considerations

Subjects were given all information regarding the study upon arrival in the birth suite, prior to administration of any drugs, in order that they could give informed consent. It was made clear that they retained the right either to refuse to participate, or withdraw from the study at any time, without fear of reprisal.

Confidentiality was maintained throughout the study, demographic details being known only to the researcher, and safely stored away from other information. Details of allocation to treatment group, and therefore type of perineal trauma sustained, were known to midwifery staff. However these details were already easily accessible to the
staff and did not pose any threat to client confidentiality.

The use of ice therapy was already an accepted practice in the hospital in which the research was carried out, therefore the risk to the client of having a new, untried treatment tested on them was eliminated. Although ice is an accepted treatment used on perineal wounds, it is one of many treatments used, with none being established as most effective and being adopted as standard policy.

The control group had no ice packs applied but retained access to other standard methods of relief from perineal pain, therefore the standard of care given was not jeopardised in any way. If the clients in the control group expressed a wish to use ice packs they were free to do so and were subsequently excluded from the study.

Results

As the type of icepack used was the only difference between the pilot and the main study procedure, the data collected from the pilot study were included in the overall analysis of results. A significance level of $p < .05$ was set for all results.

Sample Characteristics

One hundred and twenty-six women met the selection criteria for inclusion in the study. Of these women, 34 refused to participate. Reasons given for refusal included that they were too tired following delivery to think about the study, they wished to choose which form of treatment
they used mainly because they had had previous experience of using ice therapy, or, they just did not like the idea of participating in research.

Of the remaining 92 women only 60 were included in the study. Thirty-two women were lost from the study either because the staff did not inform the researcher of the subjects' availability, the patients' doctor did not give approval, or the researcher was unavailable to attend due to other commitments. A further two women had to be dropped from the study when the researcher failed to attend the 24 hour inspection of the perineum. The sample then consisted of 58 consenting, post partum women who met the selection criteria. Half of the sample number were allocated to the experimental group (n=29), and the other half to the control group (n=29).

Sample characteristics are displayed in Table 1. Subjects' ages ranged from 18-36 years of age (M=27). Thirty-one women were primiparous (53.4%), the remaining 27 were multiparous (46.5%). Parity ranged from 1-4 (M=1.5). Weight of baby ranged from 2460-4295 grams (M=3439). The amount of blood loss ranged from 100-500 ml. (M=212.93). The latter information was collected only to ensure that no participant sustained more than 600 ml. blood loss which would have meant exclusion from the study. There were 47 (81%) normal deliveries. The remaining deliveries were either by forceps (n=4, 6.9%), or vacuum extraction (n=7, 12.1%). Sixteen women sustained first degree tears (27.6%),
Table 1
Sample Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Experimental</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>26.6</td>
<td>26.9</td>
<td>26.8</td>
</tr>
<tr>
<td>Parity (range 1-4)</td>
<td>1.6</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Weight of baby (grams)</td>
<td>3455</td>
<td>3422</td>
<td>3439</td>
</tr>
<tr>
<td>Blood loss (ml)</td>
<td>212.1</td>
<td>204.5</td>
<td>212.9</td>
</tr>
</tbody>
</table>

* mean for each group

<table>
<thead>
<tr>
<th>Type of delivery</th>
<th>Control</th>
<th>Experimental</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>#23(39.7%)</td>
<td>24(41.4%)</td>
<td>47(81.0%)</td>
</tr>
<tr>
<td>Forceps</td>
<td>2(3.5%)</td>
<td>2(3.5%)</td>
<td>4(6.9%)</td>
</tr>
<tr>
<td>Vacuum</td>
<td>4(6.9%)</td>
<td>3(5.2%)</td>
<td>7(12.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of injury</th>
<th>Control</th>
<th>Experimental</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st degree tear</td>
<td>10(17.2%)</td>
<td>6(10.3%)</td>
<td>16(27.6%)</td>
</tr>
<tr>
<td>2nd degree tear</td>
<td>4(6.9%)</td>
<td>5(8.6%)</td>
<td>9(15.5%)</td>
</tr>
<tr>
<td>Episiotomy</td>
<td>15(25.9%)</td>
<td>18(31.0%)</td>
<td>33(56.9%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parity</th>
<th>Control</th>
<th>Experimental</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primiparous</td>
<td>16(27.6%)</td>
<td>15(25.9%)</td>
<td>31(53.4%)</td>
</tr>
<tr>
<td>Multiparous</td>
<td>12(20.7%)</td>
<td>15(25.9%)</td>
<td>27(46.6%)</td>
</tr>
</tbody>
</table>

# number of women
nine sustained second degree tears (15.5%), and an episiotomy was performed on thirty-three women (56.9%). The only other forms of treatment used were ultrasound or sitz baths. Ultrasound was used by one woman who was in the experimental group (1.7%). Sitz baths were used by 25 women in total (43.1%). Sixteen of these women were in the control group (27.6%) and nine were in the experimental group (15.5%) (Table 2).

Wound Condition

Analysis of covariance was used to test the first hypothesis that the application of ice to the perineal wound at four hourly intervals for the first 24 hours post partum will significantly improve the condition of the wound. Although randomization facilitates equivalence of pretreatment condition between the control and experimental groups, analysis of covariance was used to further control for any pretreatment variations in R.E.E.D.A. scores, which may have affected the posttreatment scores. All applications of icepacks were signed as given, by the attending midwife, on the data collection sheet.

The total R.E.E.D.A. scores of the experimental group were significantly lower than those of the control group, \( F(1,55) = 9.29, p = .0035 \) (Table 3). The five separate components of the R.E.E.D.A. scores were then analysed individually. The oedema ratings were significantly lower in the experimental group, \( F(1,55) = 11.14, p = .0015 \) (Table 4), but there was no significant difference in the
Table 2

Other forms of treatment used

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control(n=29)</th>
<th>Experimental (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitz Baths</td>
<td>*16 (27.6%)</td>
<td>9 (15.5%)</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>0 (0.0%)</td>
<td>1 (1.7%)</td>
</tr>
</tbody>
</table>

* number of women
Table 3

**Difference in R.E.E.D.A. Scores**

<table>
<thead>
<tr>
<th>Source</th>
<th>S.S.</th>
<th>D.F.</th>
<th>Mean square</th>
<th>F value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>30.22</td>
<td>1</td>
<td>30.22</td>
<td>9.29</td>
<td>.0035</td>
</tr>
<tr>
<td>Within groups</td>
<td>178.98</td>
<td>55</td>
<td>3.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>277.10</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent Variable - R.E.E.D.A. 2

p < .05
### Table 4

**Difference in oedema scores**

<table>
<thead>
<tr>
<th>Source</th>
<th>S.S</th>
<th>D.F.</th>
<th>Mean square</th>
<th>F value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>5.81</td>
<td>1</td>
<td>5.81</td>
<td>11.14</td>
<td>.0015</td>
</tr>
<tr>
<td>Within groups</td>
<td>28.66</td>
<td>55</td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>37.60</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent Variable - Oedema 2

p < .05
redness, $F(1, 55) = 3.04$, N.S., discharge, $F(1, 55) = .56$, N.S., ecchymosis, $F(1, 55) = .42$, N.S., or approximation, $F(1, 55) = .89$, N.S., scores.

Reported Pain

The second hypothesis that the application of ice to the perineal wound at four hourly intervals for the first 24 hours post partum will result in a significant decrease in the level of pain reported by the client, was tested by means of a T-test. The results show no significant difference in painscale ratings between the two groups, $t(56) = .7706$, $p = .4442$.

Pain scale ratings overall ranged from 0-9.4 ($M=2.58$). In the control group the range was 0-9.4 ($M=2.35$) and in the experimental group range was 0-8 ($M=2.8$). Table 5 shows the mean reported pain ratings.

Oral Analgesia

The T-test procedure was also used to test the third hypothesis that the use of locally applied ice four hourly for the first 24 hours post partum will significantly decrease the amount of oral analgesia required. The T-test indicated that there was no significant difference in the amount of oral analgesia used between the two groups, $t(56) = .3028$, $p = .7631$. Table 6 shows the mean amount of oral analgesia used.

Table 7 shows the amount of oral analgesia required by both groups in number of dosages. Four doses of oral analgesia were the maximum taken, but there is no apparent difference in the frequency of doses between the groups.
### Table 5

#### Mean Reported Pain Ratings

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice</td>
<td>29</td>
<td>2.81</td>
<td>2.41</td>
</tr>
<tr>
<td>No Ice</td>
<td>29</td>
<td>2.35</td>
<td>1.99</td>
</tr>
</tbody>
</table>

Visual analogue scale 0-10 cm.  
0 cm. = no pain  
10 cm. = severe pain
Table 6

Mean Amount Of Oral Analgesia Used

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice</td>
<td>29</td>
<td>*1.14</td>
<td>1.16</td>
</tr>
<tr>
<td>No ice</td>
<td>29</td>
<td>1.24</td>
<td>1.43</td>
</tr>
</tbody>
</table>

* number of dosages
range 0-4
Table 7

Frequency of oral analgesia

<table>
<thead>
<tr>
<th>Dosages</th>
<th>Control (n=29)</th>
<th>Experimental (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*12 (20.7%)</td>
<td>11 (18.9%)</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8 (13.8%)</td>
<td>8 (13.8%)</td>
</tr>
<tr>
<td>2</td>
<td>3 (5.2%)</td>
<td>6 (10.3%)</td>
</tr>
<tr>
<td>3</td>
<td>2 (3.5%)</td>
<td>3 (5.2%)</td>
</tr>
<tr>
<td>4</td>
<td>4 (6.9%)</td>
<td>1 (1.7%)</td>
</tr>
</tbody>
</table>

* number of women
Discussion

Wound Condition

The results indicate that ice therapy significantly improves the condition of the perineal wound, primarily through the reduction in oedema, in the first 24 hours post partum.

The conceptual framework indicates that ice therapy causes vasoconstriction resulting in a reduction of extracellular oedema and haemorrhage, which leads to an improvement in wound condition. The results of this study support the idea that there is a reduction in oedema when ice therapy is used. However, there was no significant difference in the ecchymosis ratings between the two groups. It is unclear why the results only partially support the conceptual framework, in that there is a reduction in oedema but not of ecchymosis. One reason may be due to deficiencies within the R.E.E.D.A. tool which will be discussed later.

Reported Pain

The results of this study indicate that there was no significant difference in the level of reported pain between the two groups. This finding concurs with those of Hill (1988) and Lafoy and Geden (1989) that there is no significant difference in the level of reported pain with the use of ice.

The conceptual framework stated that the reduction of pressure caused by oedema would lead to a decrease in the
level of reported pain. Although the results indicate that there was a reduction in oedema of the perineal wound, in the first 24 hours post partum, with the use of ice therapy, they do not support the theory that this in turn leads to a reduction in reported pain. It may be that a larger sample size would reveal a greater difference between the groups.

Most women commented after they had completed the visual analogue pain scale that after the pain of labour and delivery it was difficult for them to assess the level of pain they had experienced in the first day following the birth. Indeed many women stated that compared to the labour pains anything could be tolerated. As a result, reported pain estimates are probably unreliable during the initial post partum period because women will perceive them to be comparatively low. If the woman's judgement was not coloured by memory of the pain of labour and delivery more accurate pain levels may be reported. The majority of women who used the ice packs found them to be pleasant and soothing, although two women stated that they did not like the sensation of the ice packs initially.

The only other forms of treatment used in the post partum period were ultrasound and sitz baths. Ultrasound was only used by one woman who was in the experimental group so no comparison can be made. Sitz baths were used by slightly more women in the control group (n=16) than in the experimental group (n=9). Although this is not a
significant difference, it may be that the use of ice packs did provide some measure of relief to those women in the experimental group who did not require sitz baths.

One of the limitations of this study was that the amount and type of analgesia or anaesthesia used during labour was not taken into consideration. It may be suggested that if a woman has received large amounts of opiate-type analgesia or has been receiving epidural anaesthesia during labour, there may be some "hangover" effect in the immediate post partum period. This would then affect the woman's perception of pain felt from the perineal wound.

Another factor which was not considered was the amount of local anaesthetic injected into the perineum during suturing. The amount and sensitivity of the individual to the anaesthetic would vary and again could affect the perception of pain in the immediate post partum period.

Oral Analgesia

The results of this study indicate that there was no significant difference in the amount of oral analgesia taken between the two groups. The number of women requiring oral analgesia in each group was similar, 17 in the control group and 18 in the experimental group. The results also show that the amount taken was also similar in each treatment group. One woman used a combination of aspirin and codeine otherwise the type of oral analgesia used was either paracetomol or paracetomol with codeine. Oral
analgesia was taken for other reasons in addition to perineal pain. Some of these reasons included backache, abdominal pain, and to reduce pyrexia. Involution pain is a common reason for taking oral analgesia in multiparous more than primiparous women. Although this may be a confounding variable the distribution of parity between the two groups was similar. Although taken for other reasons, the use of oral analgesia would also affect the perception of any subsequent perineal pain. Oral analgesia intake may not be a valid measure of the level of perineal pain, since it was taken for a variety of reasons.

As previously discussed, the amount and type of analgesia/anaesthesia used during labour would have an effect on the level of pain and the amount of oral analgesia required in the first 24 hours post partum.

**R.E.E.D.A. Tool**

The R.E.E.D.A. tool was devised by Davidson in 1974 and used with success by Hill in 1988, but no reliability or validity figures were given by either party. Hill (1990) conducted a study to evaluate the reliability and construct validity of the R.E.E.D.A. tool which came to light after completion of this study. It was discovered that the construct validity of the tool was high, but only a moderate correlation was obtained between the ratings of the researcher and two assistants (r = .486, r = .694 respectively). Hill (1990) suggests that there may be serious limitations in the use of this tool to assess perineal condition.
Prior to commencement of this study interrater reliability for the use of the R.E.E.D.A tool was found to be very high. The researcher assessed five traumatised perineums with each assistant independently and the results indicated high correlation values as reported previously. While measuring interrater reliability the researcher and both assistants made the same observations about the tool. The redness and ecchymosis components were difficult to assess depending on the normal pigmentation of the skin. The criteria for measuring each component are different, some are measured bilaterally whereas some are assessed both bilaterally and unilaterally. Hill (1990) made similar observations. She found that by using the term "discolouration" instead of redness and ecchymosis more accurate results were obtained. Hill (1990) also states that all components are measured in centimetres laterally from the wound but no allowance is made for measurement lengthways down the wound.

Although the aim of the R.E.E.D.A. tool is to enable objective assessment of the perineal wound it is clear that subjective judgement also contributes. The experience of the raters may also have an effect on the quality of assessment of the perineal wound. More experienced midwives may give a more accurate assessment. In this study the raters all had more than five years experience as practising midwives. Hill (1990) does not state the level of expertise of the raters involved in the assessment of
the R.E.E.D.A. tool. Reliability figures may then depend on the level of experience and compatibility of the subjective assessment of the raters.

Summary

The major findings of this study indicate that ice therapy in the first 24 hours post partum significantly improves wound condition due to reduction in oedema. Ice therapy applied to the perineal wound in the first 24 hours post partum does not have significant effects on the level of reported pain or the amount of oral analgesia used. However, the assessment of perineal pain and the amount of oral analgesia used may not be accurate due to many external influencing factors. The results of this study indicate that two of the original three hypotheses must be rejected. Accepted is the hypothesis that the application of ice to the perineal wound at four hourly intervals in the first 24 hours post partum will significantly improve the condition of the wound.

The R.E.E.D.A. tool has been used with success in this study and in a previous study by Hill in 1988. The reliability and validity of the tool to assess the condition of the perineal wound is currently in question, although the researcher found that interrater reliability correlation in this study was extremely high.

Limitations

This study has several limitations which have been identified. As previously mentioned, there was a risk of
experimenter bias because the treatment group was known to the researcher. Secondly, the experimental group may also have benefitted from extra attention from the midwives when the ice packs were applied four hourly which may have affected the reported pain results. The generalisability of the results are limited. They could only be useful if referred to a similar group of women in the same type of setting as in used this study.

Another limitation was that no control was made over the type of analgesia and/or anaesthesia used in labour and suturing of the perineal wound which would have some effect on the level of reported pain in the first 24 hours post delivery.

The reported pain levels and amount of oral analgesia taken could have been influenced by other factors. Some women stated that they took oral analgesia for reasons other than perineal pain and this factor would have influenced the results. Ethnicity of subject in relation to injury and reaction to pain, which may also have affected the reported pain results, was not taken into account when collecting demographic data.

Nursing Implications

This study indicates that the use of ice therapy improves the wound condition of perineal injuries in the first 24 hours post partum, primarily through the reduction of oedema. For this reason alone it would seem beneficial to employ ice therapy as a standard method of treating
perineal injury to achieve an improvement in wound condition, in the first 24 hours post partum.

Although there were no significant reductions in reported pain or amount of oral analgesia required between the two groups, most women who used the icepacks found them pleasant and soothing. The use of ice therapy is already an accepted practice in many maternity hospitals. This research would suggest that this practice should continue, bearing in mind that not all women would feel comfortable with this treatment.

The comments of Grant and Sleep (1989) should be taken into account when using ice therapy. The ice should not be applied in a solid piece, and should be covered in a layer of gauze prior to application to reduce the risk of "ice burn". The plastic sachets used in the main part of the study were easy to store and use. It is a simple task to crush the ice prior to application. The size of the sachet seemed to suit the purpose.

Recommendations for Future Research

The findings of this study again show some inconsistencies with those of previous studies. Further research is therefore required in this field.

A larger study using the same design could be conducted to give more accurate and powerful results. Stricter control could be made over the influencing factors identified as limitations to this study.

The results of this study indicate that ice therapy is
beneficial in improving wound condition in the first 24 hours post partum. It would be interesting to investigate whether ice therapy has beneficial effects over a longer period of time, for example 48 hours.

The results of this study lead to the question of whether there is actually a strong relationship between oedema and pain. Lafoy and Geden (1989) posed the same question following the results of their research. Hill (1990) also found that the amount of oedema was not correlated with level of pain in a study conducted to evaluate the R.E.E.D.A. tool. The amount of oedema suffered by the women in this study may not be severe enough to cause high levels of reported pain. The R.E.E.D.A. scores do not indicate that the women experienced severe perineal damage. Many women did not require any oral analgesia at all in the immediate post partum period. If the damage to the perineum was severe, causing more extensive oedema, the analgesic properties of ice therapy may have been more apparent. The relationship between oedema and pain needs to be investigated further. A study could be conducted into the effect of ice therapy on more severe perineal wounds to test the theory that oedema leads to pain.

Finally, the conflicting correlation results using the R.E.E.D.A. tool suggest that further study is required to investigate the reliability and validity measures of this tool. The need for future research into the treatment of
perineal wounds and relief of post partum pain has already been identified. It is therefore important that a reliable method of assessing the condition of the perineum is found to enable future research to be carried out accurately.
APPENDIX A

Information Sheet and
Consent Form
INFORMATION SHEET

Effect of ice therapy on post partum perineal pain and wound condition.

Sheila Klimczyk Registered Midwife (Researcher)

Many women sustain either a cut (episiotomy), or a tear (laceration) during childbirth which requires insertion of stitches after delivery of the baby. Many different methods of treatment are used to help ease discomfort and promote healing of the wound. One method is to apply ice packs to the stitch line. This method, however, has not been evaluated in this hospital.

Should you agree to participate in this study, you will be allocated to one of two groups. One group will have ice packs applied to the stitch line every four hours for the first twenty-four hours after having the baby, in addition to the normal care. The other group will not use ice packs, but other methods of improving any discomfort felt will be available, should they be required.

One of the researchers will look at the stitches one hour after the birth of your baby, and then again after twenty-four hours, when you will also be asked to answer one easy question. Daily checks of the stitches are part of the routine procedure while you are in hospital.

The length of time that you will be required to participate in the study is only for the first twenty-four hours after you have had your baby.

At all times during the study, all information will be kept in strictest confidence, your name will not be used. Your participation in this study is entirely voluntary, you are free to refuse consent or withdraw from the study at any time, without fear that your care will be affected in any way.

Your participation in this research will help improve the care given and allow us to provide a better service in the future.

A consent form is attached should you wish to participate. If you have any further questions about the study, or would like to know the results of the study on completion, please do not hesitate to contact me at one of the numbers below.

Sheila Klimczyk
445 2222 page number 328
275 8325
CONSENT FORM

Effect of ice therapy on post partum perineal pain and wound condition.

I have read the accompanying information sheet and fully understand the nature and purpose of this study. I have had the opportunity to ask any further questions I wish to have answered.

I understand that I will be required to participate in the study for 24 hours only.

I understand that I may withdraw from the study at any time without fear of reprisal.

I have been assured of complete confidentiality at all times, should I consent to participate.

---------------------------------  ---------------------------------
Signature of client                Date

---------------------------------  ---------------------------------
Signature of witness               Date
APPENDIX B

Visual Analogue Scale
Visual Analogue Scale (Scott & Huskisson, 1976)

The diagram above represents a pain scale with the words "no pain" on the left hand side, and "severe pain" on the right. With a single downwards line, for example "|", please mark the point on the scale which best represents the amount of pain or discomfort you have felt from your stitches over the past 24 hours.

Thank you for your help and cooperation.
APPENDIX C

R.E.E.D.A. Scale
### R.E.E.D.A. Scale (Davidson, 1974)

**Research Identification Number:**

<table>
<thead>
<tr>
<th>POINTS</th>
<th>REDNESS</th>
<th>EDEMA</th>
<th>ECCHYMOSIS</th>
<th>DISCHARGE</th>
<th>APPROXIMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Closed</td>
</tr>
<tr>
<td>1</td>
<td>Within .25 cm. of incision bilaterally</td>
<td>Perineal, less than 1 cm. from incision</td>
<td>Within .25 cm. bilaterally or .5 cm. unilaterally</td>
<td>Serum</td>
<td>Skin separation 3 mm. or less</td>
</tr>
<tr>
<td>2</td>
<td>Within .5 cm. of incision bilaterally</td>
<td>Perineal and/or Vulvar, between 1 to 2 cm. from incision</td>
<td>Between .25 to 1 cm. bilaterally or between .5 to 2 cm. unilaterally</td>
<td>Serosanguinous</td>
<td>Skin and subcutaneous fat separation</td>
</tr>
<tr>
<td>3</td>
<td>Beyond .5 cm. of incision bilaterally</td>
<td>Perineal and/or Vulvar, greater than 2 cm. from incision</td>
<td>Greater than 1 cm. bilaterally or 2 cm. unilaterally</td>
<td>Bloody, purulent</td>
<td>Skin, subcutaneous fat and fascial layer separation</td>
</tr>
</tbody>
</table>

**CORE**

| TOTAL |
APPENDIX D

Data Collection Sheet
DATA COLLECTION SHEET

Effect of ice therapy on post partum perineal pain and wound condition.

RESEARCH IDENTIFICATION

NUMBER: ________________________________________________

AGE OF SUBJECT: _______________________________________

PARITY: ______________________________________________

TYPE OF DELIVERY: _____________________________________

WEIGHT OF BABY: _______________________________________

BLOOD LOSS: ___________________________________________

TYPE OF PERINEAL INJURY: 1st degree tear

2nd degree tear

Episiotomy

(please tick)

ICE PACKS APPLIED: Yes

No

TIME OF APPLICATION: HOUR | 0 | 4 | 8 | 12 | 16 | 20 | 24

SIGNATURE: ___________________________________________

OTHER TREATMENT

Sitz baths

Ultrasound

Infrared lamp

Oral analgesia

Other (please state) ___________________________________

IF ORAL ANALGESIA USED PLEASE NAME:_________________
References


