

500 Consecutive Cesarean Deliveries Closed With Subcuticular Absorbable Staples

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Introduction

The availability of a novel absorbable subcuticular stapling modality presents a new skin closure option for cesarean delivery. The device was designed to provide the comfort, convenience and cosmesis of subcuticular suture with the speed of percutaneous metal staplers and utilizes a rapid single person technique. Subcuticular staples may offer improvements in clinical outcomes, patient satisfaction, efficiencies and cost savings.

Objectives

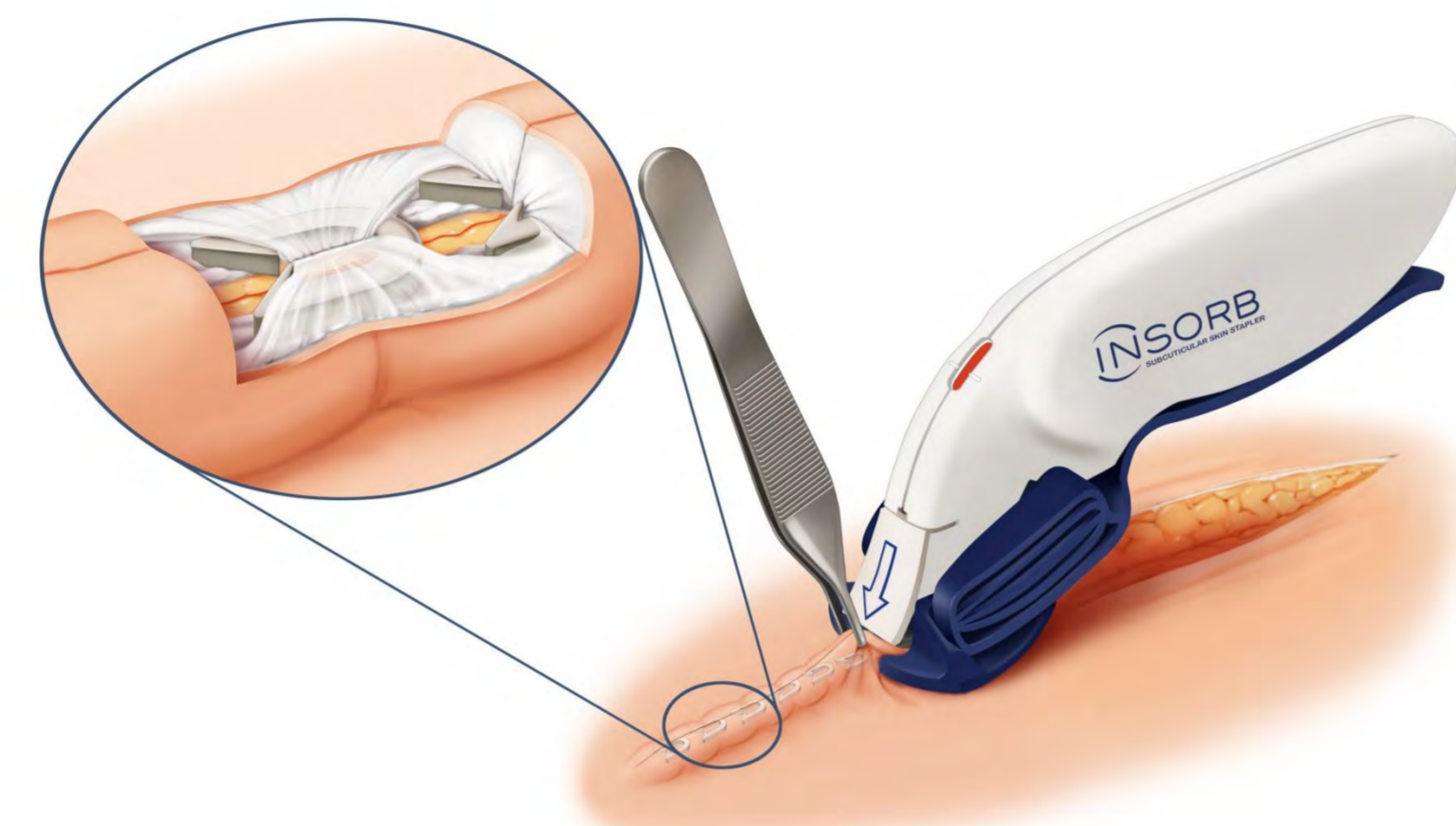
The study of 500 consecutive cesarean deliveries closed with this new modality over a four year period was conducted to assess the effectiveness at surgery, healing characteristics, incidence and types of wound complications, cosmesis, and patient satisfaction.

Methods

Data were from 500 consecutive cesarean procedures closed with subcuticular staples by five clinicians in a single obstetric practice during a four year period ending December 2008. Data were from clinic medical records and two community hospitals 30 day post discharge infection surveillance programs. Data were complete for all cases with none excluded. Medical records were reviewed for confirmation of surgical site infection and identification of other incisional complications, and possible infection risk factors. The infection rates and the incidence of incisional complications to 30 days post discharge were determined. Wound healing and patient comfort were assessed at follow-up.

Results and Conclusions

Incisional complications were one hematoma, no seromas, and no wound disruptions. The overall surgical site infection rate of 1.2% varied with risk factors. These were low maintenance wounds that patients found comfortable and aesthetically pleasing. Absorbable subcuticular staples provide efficient and uncomplicated wound closures associated with a high level of patient satisfaction.



Clinical Outcomes (n=500)

Complications	Incidence
Surgical Site Infection Rate	6 (1.2%)
Seroma	0
Hematoma	1
Wound Disruption	0

Study Population Characteristics

SSI Type	Median or Number of Patients	Range or Percentage
Body Mass Index	31.8	20.2 - 62.6
ASA = 1	n=149	29.8%
ASA = 2	n=323	64.6%
ASA = 3	n=27	5.4%
ASA = 4	n=1	0.2%
Duration, minutes	29	11 - 246
Received Antibiotics	n=426	85.0%
In Labor	n=177	35.4%
Age, years	31	16 - 45
Primary Section	n=274	54.8%

Risk Factors of the Six Infections

((#) Indicates Factors in the Upper Quartile)							
SSI Type	BMI	ASA	Duration (mins)	ATB	Labor	Age	Primary
1. Deep Incisional	33	2	29	YES	NO	28	NO
2. Superficial Incisional	(39)	2	36	YES	YES	28	YES
3. Superficial Incisional	(43)	2	38	YES	YES	(38)	YES
4. Superficial Incisional	32	2	(45)	YES	NO	(41)	YES
5. Superficial Incisional	(45)	2	(90)	YES	YES	35	YES
6. Superficial Incisional	35	2	(240)	YES	NO	(38)	YES

SSI - Surgical Site Infection; BMI - Body Mass Index; ASA - American Society of Anesthesiologist Score; ATB - perioperative antibiotics; Primary - Patient's First Cesarean

* Absorbable Subcuticular Skin Staples Vs. Percutaneous Metal Skin Staples



At Surgery



At 1 Week

Absorbable Subcuticular Skin Staples (Pfannestiel)



At Surgery



At 15 Months

Discussion

Subcuticular absorbable staples have been shown to be associated with low wound complications, improved patient comfort, and cosmetic healing in this study and reported in other clinical studies¹⁻⁴. We postulate that these improved outcomes may be due to the following:

- The smooth non-porous absorbable staple is comprised of a benign co-polymer of predominantly PolyLactic Acid, shown to elicit a very low inflammatory response in animal and human clinical studies^{1, 3-9}, and may account for decreased serous exudate and pain^{1, 4}.
- Absorbable staples are placed entirely within the dermis without percutaneous insult and the associated patient discomfort and anxiety^{1, 4}.
- The staples precisely and effectively secure the dermis without tissue strangulation or compression that can occur with suture and metal staples⁵⁻⁸.
- An interrupted placement permits immediate post operative drainage. The interrupted staples also avoid infection provoked by inoculation and contamination along a continuous suture line⁶⁻⁸.

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