# Pediatric circumcision using n-butyl-cyanoacrylate plus MS monomer: bacteriostatic and cosmetic advantages over suture

**S. Strambi, C. Spinelli**

Chair of Pediatric Surgery
University of Pisa, Italy

# CIRCUMCISION

- Partial or complete removal of the penis foreskin (prepuce)

- 75% of male population of the United States

# ADVANTAGES

- Minor risk of urinary tract infections (UTIs) and penile skin inflammation (e.g.balanitis, posthitis and balanoposthitis)

- Partial protection against sexual transmitted infections (STIs), such as HPV, HSV-2 and HIV

*Morris BJ et al. BMC Pediatr. 2012*

# ADVANTAGES

- Decreased risk of invasive penile cancer (as predisponing condition are very uncommon)

*Morris BJ et al. ISNR Urol. 2014*

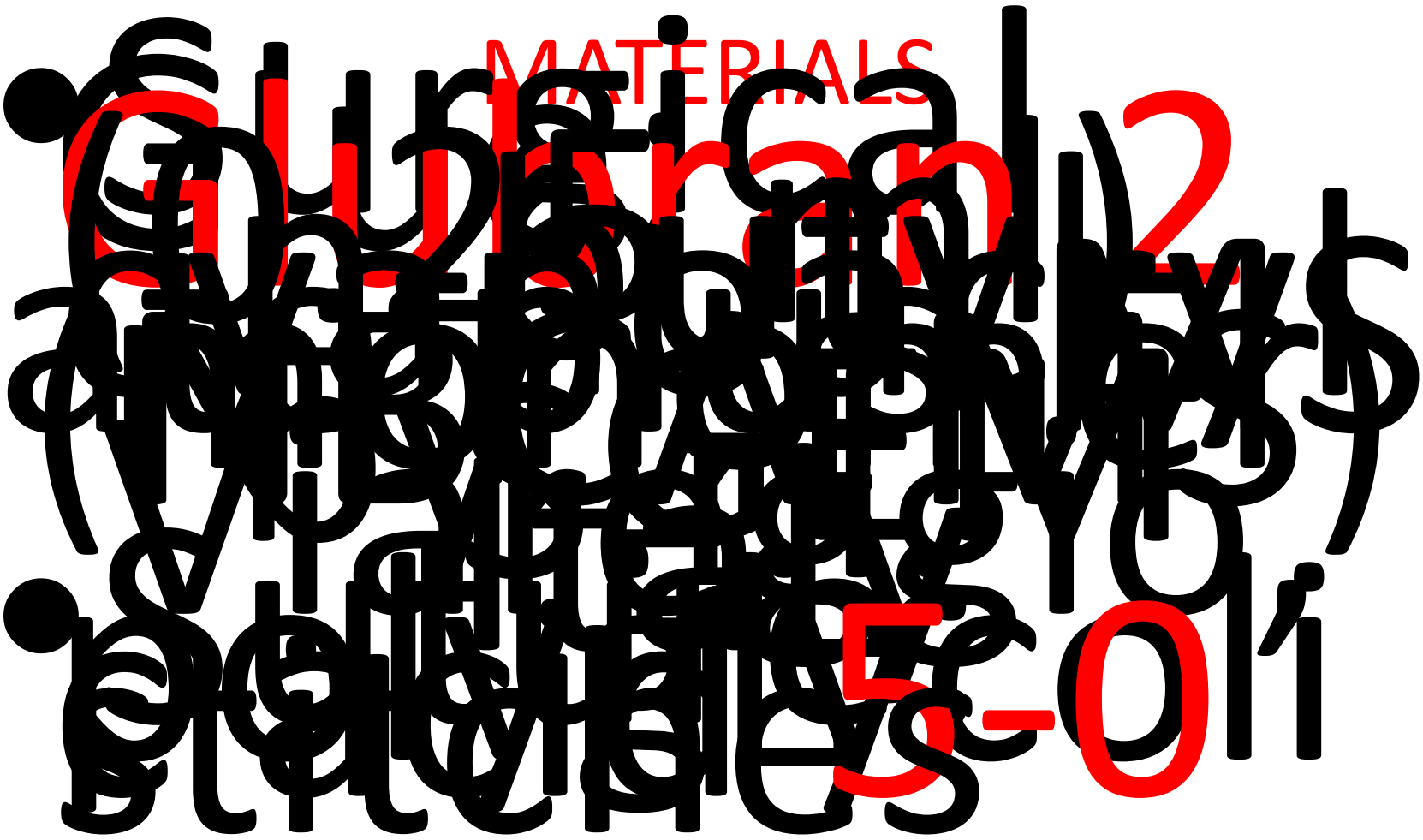
# INTRODUCTION

- Different techniques have been described

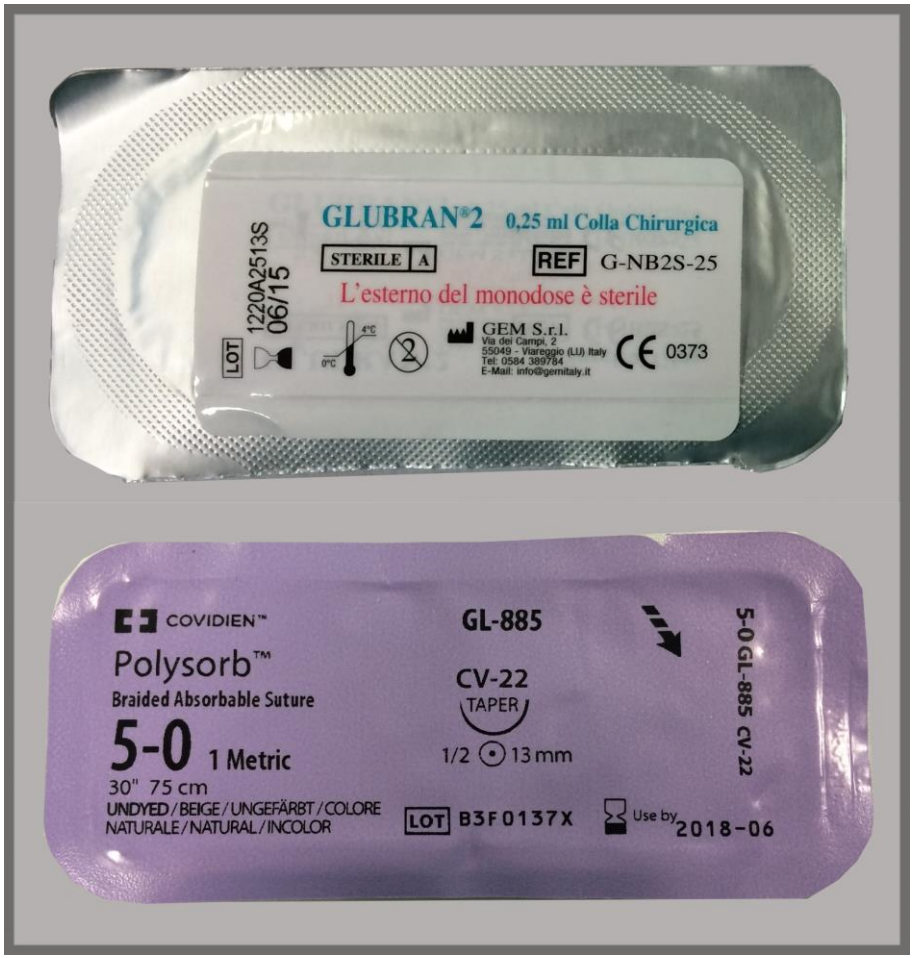
- As adsorbable sutures leave stitch marks along the suture line, the use of glue has been introduced and widely increased

# AIM OF STUDY

To test bacteriostatic and cosmetic effects of tissue glue in wound approximation of children circumcision, compared to adsorbable sutures


MATERIALS
Journal
Physics
5-01

# MATERIALS


GLUBRAN®2 0,25 ml Colla Chirurgica
STERILE A
REF G-NB2S-25
L'esterno del monodose è sterile
LOT 1220A2513S 06/15
GEM S.r.l.
Via dei Campi, 2
55049 - Viareggio (LU) Italy
Tel: 0584 389784
E-Mail: info@gemitaly.it
CE 0373
COVIDIEN™
Polysorb™
Braided Absorbable Suture
5-0 1 Metric
30" 75 cm
UNDYED / BEIGE / UNGEFÄRBT / COLORE NATURALE / NATURAL / INCOLOR
GL-885
CV-22
TAPER
1/2 13 mm
LOT B3F0137X
Use by 2018-06
5-0 GL-885 CV-22

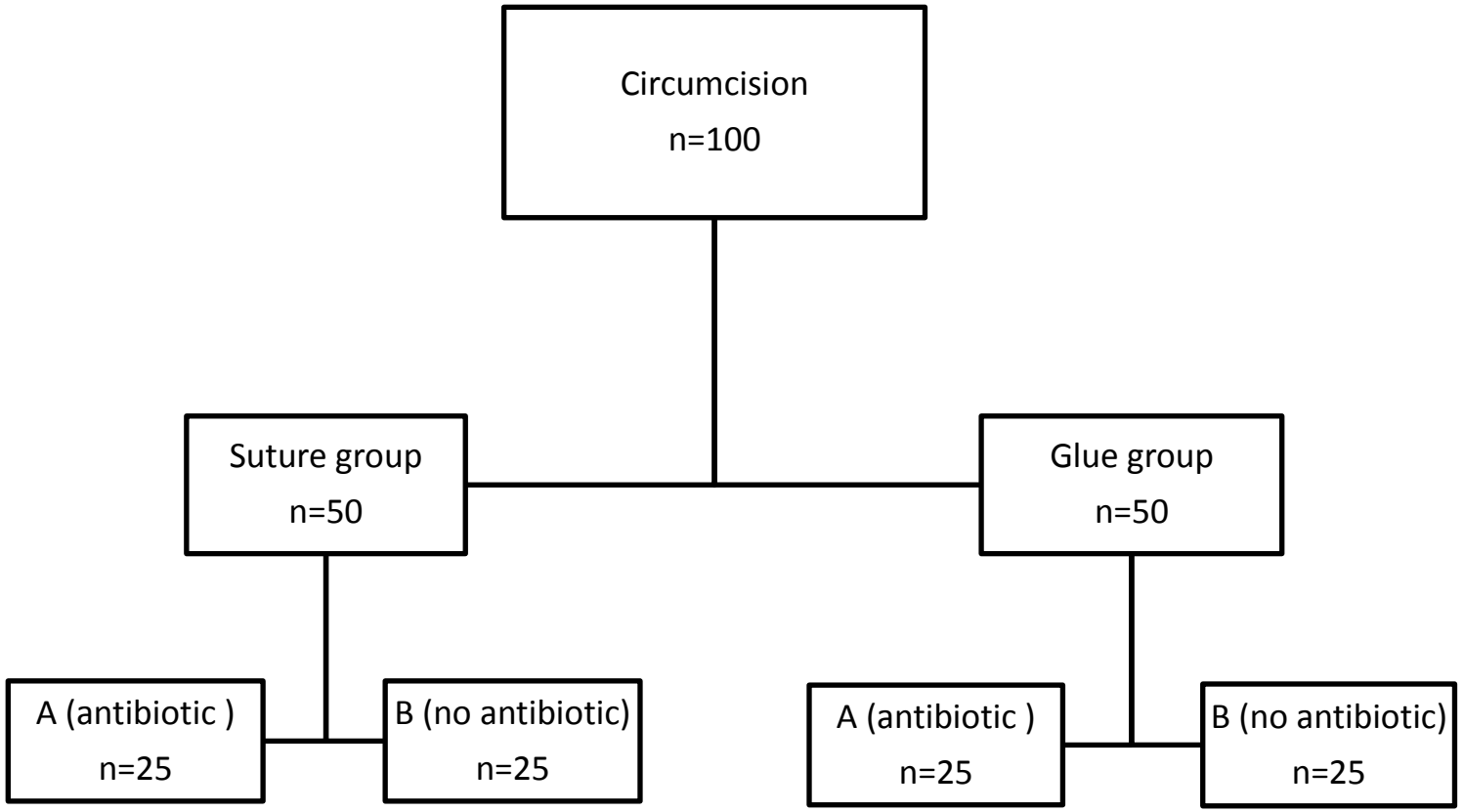
# METHODS

Between January 2013 to January 2016

100 boys (range 18 months – 14 years) underwent elective circumcision

73 ethnical/religious reasons
27 phimosis

# METHODS


Circumcision
n=100
Suture group
n=50
Glue group
n=50
A (antibiotic )
n=25
B (no antibiotic)
n=25
A (antibiotic )
n=25
B (no antibiotic)
n=25

# SURGICAL TECHNIQUE

- The penis foreskin is placed in traction and the skin is incised with the cold-scalpel
- The skin is separated from dartos by round-tip scissors and it is excised with part of the mucosal cuff
- To approximate the wound margins, the frenulum preputii is matched with the raphe penis and the edges are aligned holding the skin together by forceps

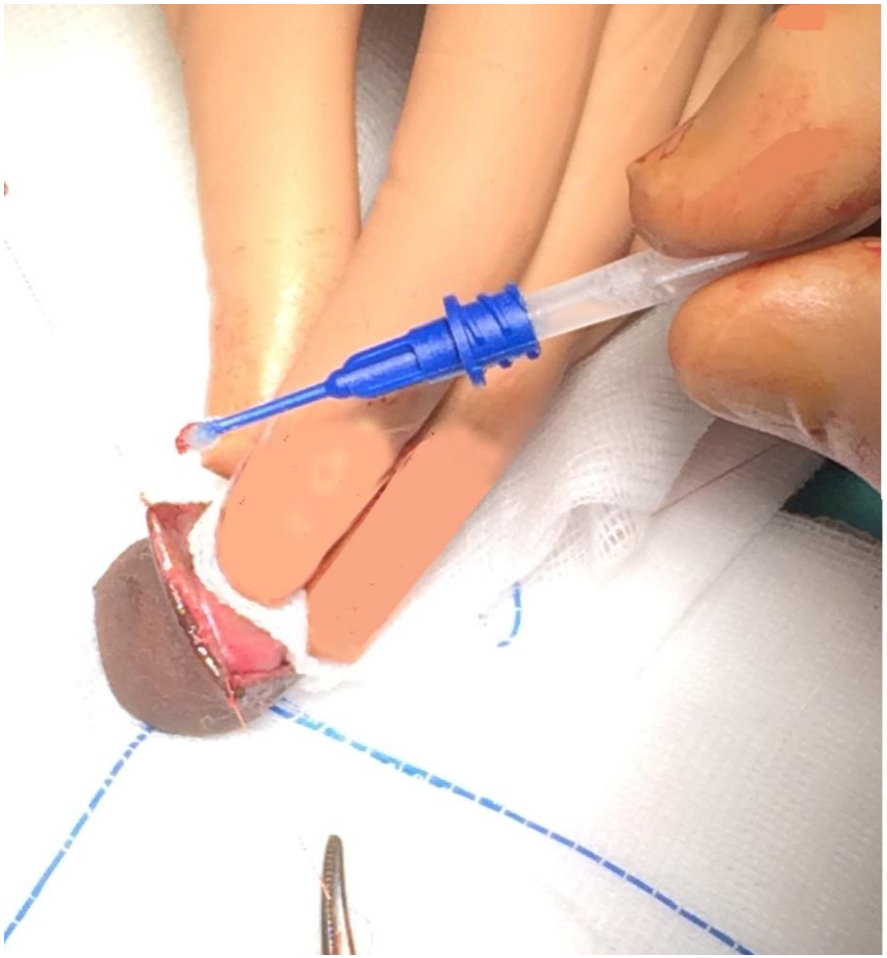
# …than the procedure was different in the two groups

In the “suture group”, 4 stitches for each side (approximatively) were employed

# …than the procedure was different in the two groups

In the “glue group” we applied Glubran2 protecting glans and urethra with a damp gauze; edges were held together until the glue was dried (about 1’ each)

# GLUE AND SUTURE PROCEDURE





# METHODS

After surgery, in each group:

- subgroup A received 6 days of *Amoxicillin/clavulanic acid* (45 mg/6,4 mg/kg/day) and *Neomycin sulfate* topical cream (twice a day)

- subgroup B did not receive any post-operative drugs

# METHODS

The post-operative pain score has been assessed after 4, 8 and 24 hours, utilizing Children and Infants Postoperative Pain Scale (ChIPPS)

ChIPPS Scale

| Item | Score **0** | Score **1** | Score **2** |
|---|---|---|---|
| **Crying** | None | Moaning | Screaming |
| **Facial expression** | Relaxed smiling | Wry mouth | Grimacing |
| **Posture of the trunk** | Neutral | Variable | Rear up |
| **Posture of the legs** | Neutral | Kicking | Tightened |
| **Motor restlessness** | None | Moderate | Restless |

0-3 → No requirement for treating pain
4-10 → Progressively greater need for analgesia

*Buttner W, Finke W. Paediatr Anaesth, 2000;10:303-318*

# METHODS

Wound was examined on 7th postoperative day to evidence:

-edema

- signs of infection (local pain, erythema, serous/seropurulent discharge)

# METHODS

Scars were evaluated after 30 and 180 days:

-Sufficient

-Good

-Excellent

on VAS for scar evaluation

*R Fearmonti et al. Eplasty 2010*

# RESULTS

## Post-operative complication

No patients of both group experienced any post-operative complication (no bleeding, no dehiscence)

# RESULTS

Operation time:

significantly higher in the suture group

(20 vs 14 minutes - $P < 0.001$)

# RESULTS

Postoperative pain:

less duration and severity in the glue group
(but not significantly different)

# RESULTS

**Post-operative pain, according to ChIPPS**

| | After 4 hours | | | After 8 hours | | | After 24 hours | | |
|---|---|---|---|---|---|---|---|---|---|
| | **0** | **1** | **2** | **0** | **1** | **2** | **0** | **1** | **2** |
| **Suture group** | 0 | 17 | 33 | 13 | 22 | 15 | 31 | 15 | 4 |
| **Glue group** | 9 | 29 | 12 | 14 | 29 | 7 | 42 | 8 | 0 |
| ***P**** | ns | | | ns | | | ns | | |

* for approriate Fisher test, mild and moderate pain columns were joined

# RESULTS

## Edema (7th day)

7 (14%) cases in suture group

4 (16%) in subgroup A

3 (12%) in subgroup B

# RESULTS

## Infections ($7^{th}$ day)

5 (10%) serous discharges in suture group,

5 (20%) in subgroup B

# RESULTS

**Comparison of infection rate between the groups after 7 days.**

| | | Infection | Total |
|---|---|---|---|
| **Suture group** | **A** | 0 | 5 (10%) |
| | **B** | 5 (10%) | |
| **Glue group** | **A** | 0 | 0 |
| | **B** | 0 | |
| **P** | | | <0.001 |

# RESULTS

## Infections ($7^{th}$ day)

The incidence of infection in suture group as compared to glue group was *statistically significant* ($P < 0.001$)

# FOLLOW - UP

After 30 days:

the regularity of the wound edges and the overall cosmetic results were better in the glue group ($P < 0.001$)

# Esthetical results after 30 days

| | Sufficient<br>*n* (%) | Good<br>*n* (%) | Excellent<br>*n* (%) |
|---|---|---|---|
| **Suture group** | 18 (36) | 29 (58) | 3 (6) |
| **Glue group** | 0 (0) | 18 (36) | 32 (64) |
| ***P**** | | | < 0.001 |

# FOLLOW - UP

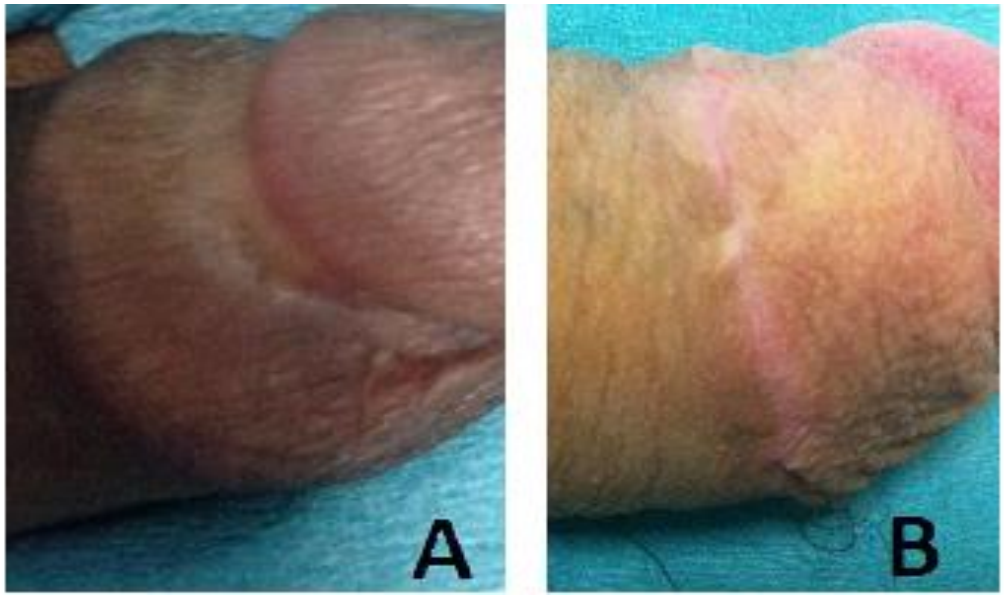
After 180 days:

cosmetical advantage of tissue glue was further confirmed ($P<0.001$)

# Esthetical results after 180 days

| | Sufficient<br>*n* (%) | Good<br>*n* (%) | Excellent<br>*n* (%) |
|---|---|---|---|
| **Suture group** | 13 (26) | 32 (64) | 5 (10) |
| **Glue group** | 0 (0) | 16 (32) | 34 (68) |
| ***P**** | | | < 0.001 |

# Esthetical results after 180 days




**A: GLUE GROUP** **B: SUTURE GROUP**

# CONCLUSION # 1

In the glue group operation time was significantly shorter and cosmetic results were significantly better compared to the suture one

# CONCLUSION # 2

The possibility of avoiding the administration of a post-operative antimicrobial therapy is considerably advantageous in pediatric patients

# CONCLUSION

For all these reasons, surgical tissue glue should be considered a **better alternative** to adsorbable sutures in pediatric circumcision




# THANK YOU !