

The effects of **sinus mucosal removal** during
orbital wall reconstruction in an experimental
model

**Bo Young Park, M.D.,Ph.D., Ji-Hyun Park, M.D., Sung-Jun Mun, M.D.,
Seung-Eun Hong, M.D., Hyun-Suk Suh, M.D., So Ra Kang, M.D.,Ph.D.**

Department of Plastic Surgery, Ewha Womans University Hospital

“Nothing to disclose”

Objective of the study

Repair of blowout fracture



Possibility of infection with any
implants

EFFECTS OF MUCOSA REMOVAL DURING REPAIR?

- *Evaluate the healing process*
- *Inflammatory reactions*
- *Process of bone formation*
- *Difference of capsule formation*

IN A RABBIT MODEL, HISTOPATHOLOGIC ANALYSIS

MATERIALS AND METHODS

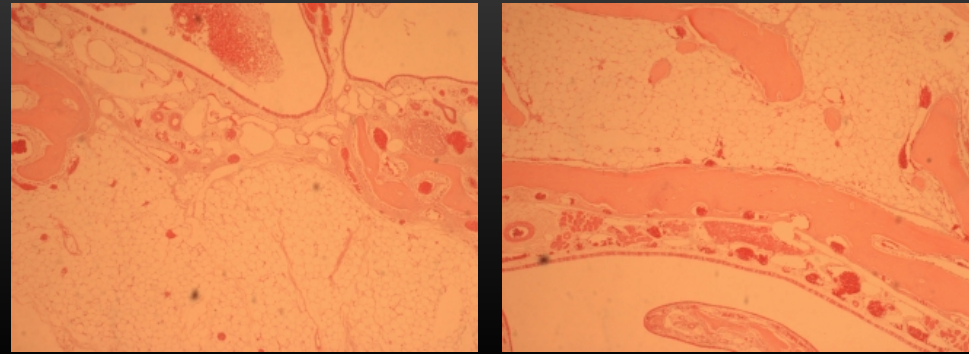


- 20 New Zealand rabbits
- A 1.5 cm x 1.5 cm bone window
- Strapping of sinus mucosa
 - : experimental group
 - No manipulation
 - : control group
- Repair with absorbable plates

Assessment(3, 6, 9, 12 wks)

- *Grade of inflammatory reactions*
 - *Proportion of woven bone*
 - *Amounts of fibrovascular proliferation*
 - *Capsule thickness around implant*
-

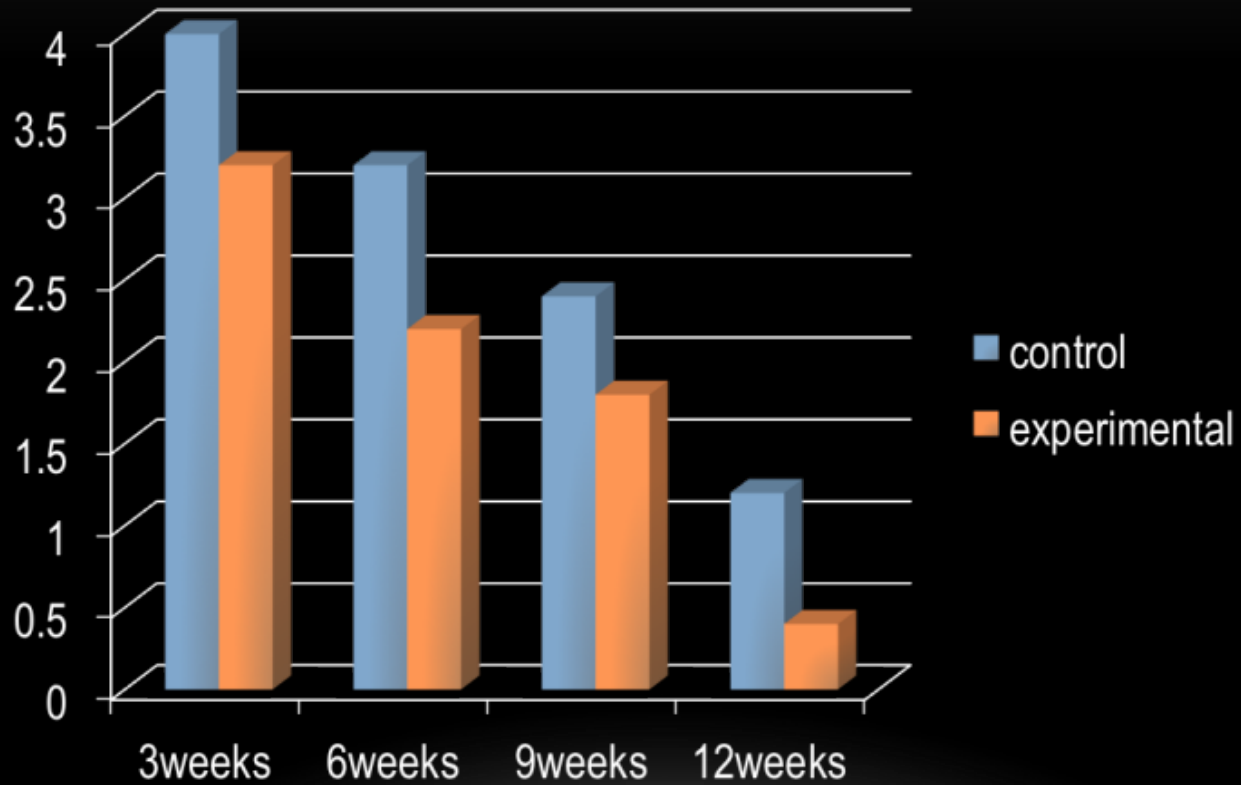
RESULTS



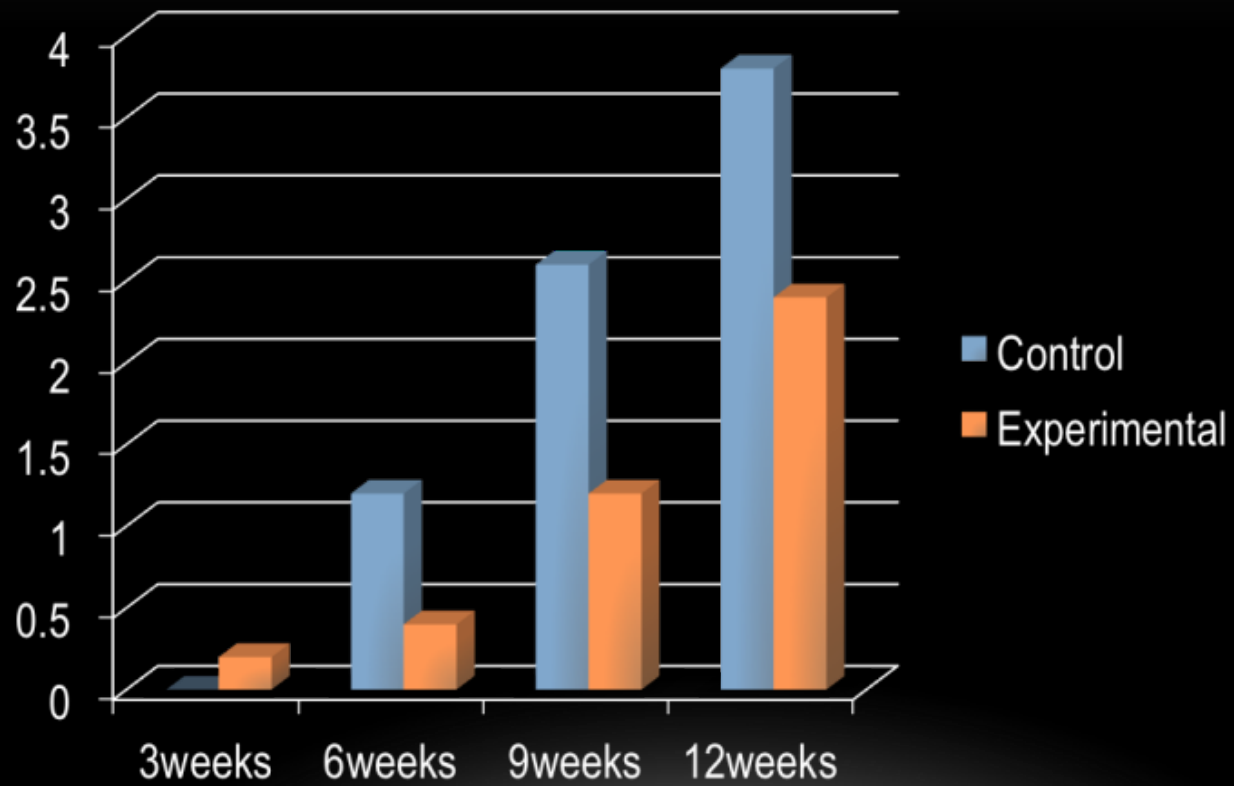
- Average of Inflammation(I) and fibrosis(F)

| | Control group | Experimental group | P-value |
|--------------|---------------|--------------------|----------|
| 3 weeks (I) | 4 | 3.2 | 0.030(*) |
| (F) | 0 | 0.2 | 0.171 |
| 6 weeks (I) | 3.2 | 2.2 | 0.014(*) |
| (F) | 1.2 | 0.4 | 0.019(*) |
| 9 weeks (I) | 2.4 | 1.8 | 0.423 |
| (F) | 2.6 | 1.2 | 0.138 |
| 12 weeks (I) | 1.2 | 0.4 | 0.269 |
| (F) | 3.8 | 2.4 | 0.046(*) |

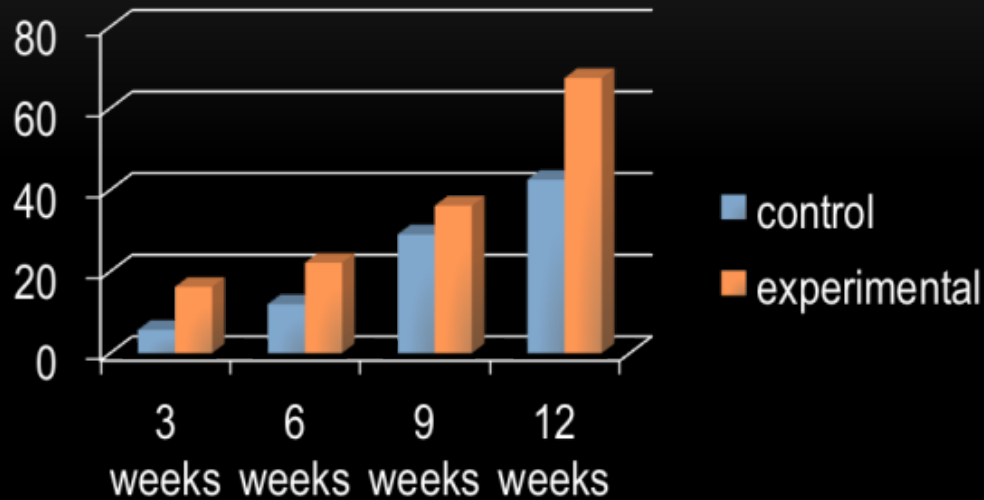
- Inflammation



- Fibrosis



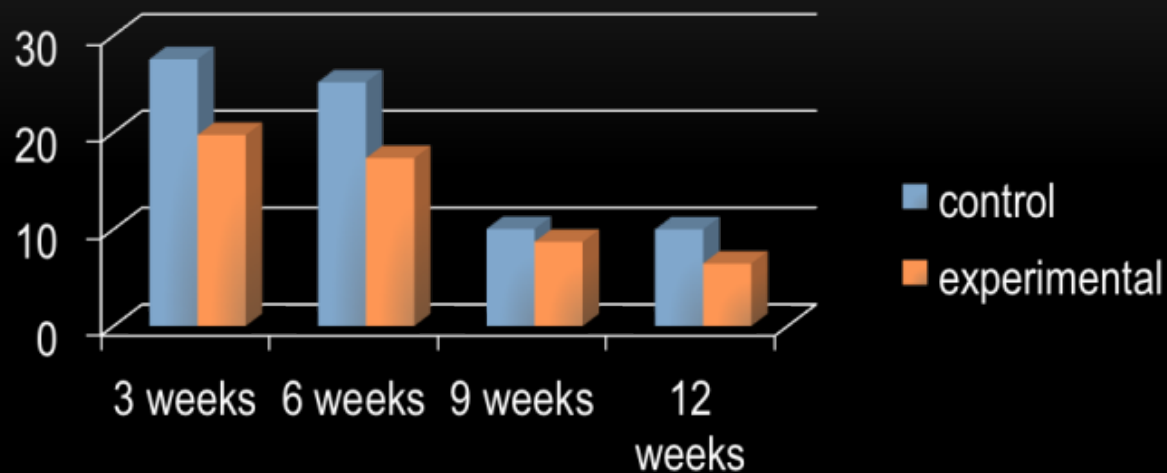
- Woven bone formation



| | Control group | Experimental group | p-value |
|----------|---------------|--------------------|----------|
| 3 weeks | 5.72 % | 16.27 % | 0.261 |
| 6 weeks | 12.03 % | 22.20 % | 0.014(*) |
| 9 weeks | 29.13 % | 36.16 % | 0.031(*) |
| 12 weeks | 42.56 % | 67.46 % | 0.005(*) |

Woven bone/Total tissue chamber(%)

- Capsule thickness



| | Control group | Experimental group | P-value |
|----------|---------------|--------------------|----------|
| 3 weeks | 27.59 | 19.76 | 0.076 |
| 6 weeks | 25.22 | 17.37 | 0.241 |
| 9 weeks | 10.05 | 8.71 | 0.153 |
| 12 weeks | 10.00 | 6.48 | 0.004(*) |

Thickness of implant capsule(um)

CONCLUSIONS

- Sinus mucosa removal during repair of orbital fracture
 - Lesser inflammatory reaction
 - More woven bone formation
 - Reduced fibrosis
- Faster bone healing with lesser possibility of infection