CERTIFICATE OF ATTENDANCE

This is to certify that

Rizki Rahmadian

participated as a speaker
The 15th Asia Pacific Association of Surgical Tissue Banking
held from August 27 to 29, 2014 in Gifu, Japan.

Yudo Hachiya, M.D., Ph.D.
President
The 15th Asia Pacific Association of Surgical Tissue Banking

THE EFFECTS OF LYOPHILIZED AMNIOTIC MEMBRANE ON PREVENTION OF PERITENDINOUS ADHESION FORMATION IN RABBITS ACHILLES TENDON HEALING

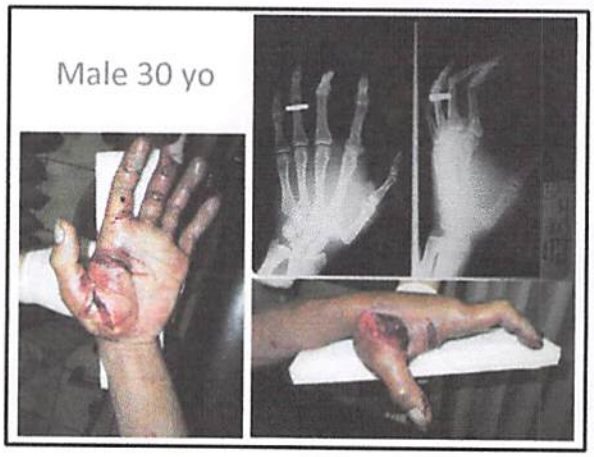
Rizki Rahmadian

Tissue Bank

Orthopaedic and Traumatologi Department
Andalas University/ M Djamil Hospital
M. Djamil Hospital Tissue Bank Padang West Sumatera

M Djamil Hospital Padang

Male 30 yo



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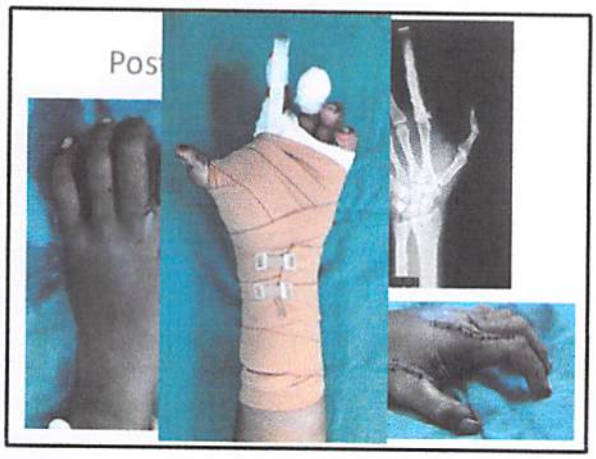
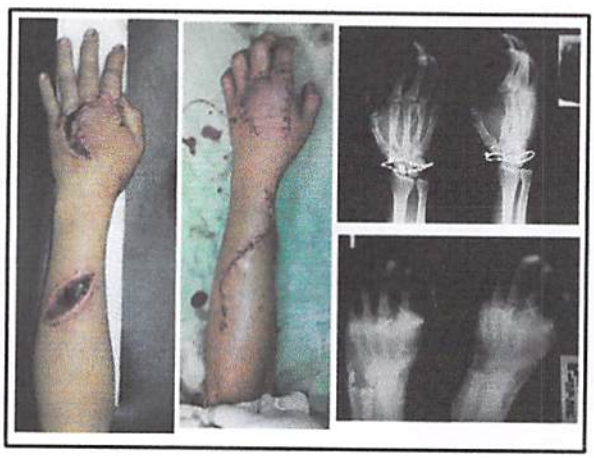




Adhesion Prevention

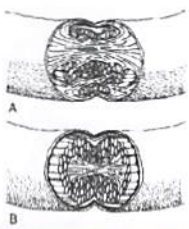
Mechanic :
- Alumina sheath
- Polyethylene membrane
- Cellophane
- Sterispon wrapping
- Stainless steel sheeting
- Silicone sheeting
- Silicone rubber envelope
- Polytetra fluoroethylene
- Surgical membrane
- **Amnion membrane**

Biologic :
- Cortisosn
- Dextran
- Collagen inhibitor
- Antihistamin
- Indomethasin
- Hyaluronic acid
- 5-fluorourasil
- Injection of stem cells
- Manipulating growth factors
- Gene theraphy
- **Amnion membrane**

Theoretical Construct

Rupture → Tendon Repair → tion → stic → elling

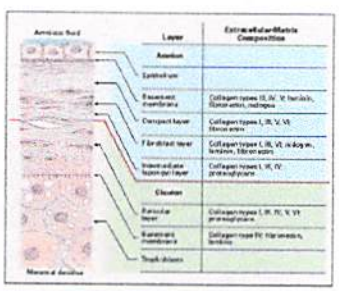
Adhesion Formation



Extrinsic & Intrinsic Mechanism [7,21]

Amniotic Membrane

- Fetal membrane → 0,02 – 0,5 mm [10]
- Rich of collagen type I, III and IV [10]
- Antiscarring →downregulated TGF β [10]
- Non imunogenic [10]
- Lyophilization procedures



Hassan Niknejad. PROPERTIES OF THE AMNIOTIC MEMBRANE FOR POTENTIAL USE IN TISSUE ENGINEERING



Hypothesis

Lyophilized amniotic membrane could prevent peritendinous adhesion formation in rabbits Achilles tendon healing

Research Methode

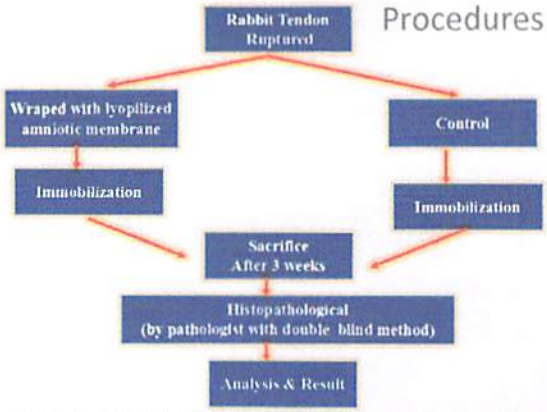
- Experimental study with simple random pattern
- White rabbits, New Zaeland race
- Sample → Ferderer

$$RAL\ (t-1)\ (n-1) > 15$$

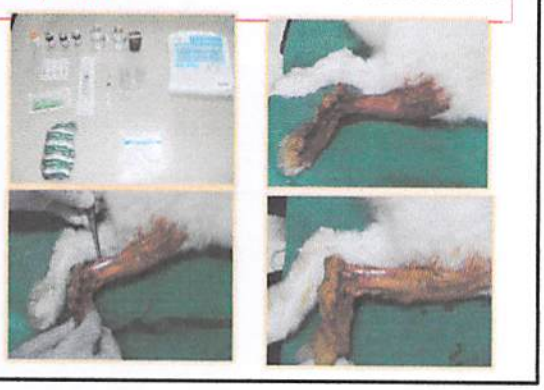
$n > 16$

$t = 2$

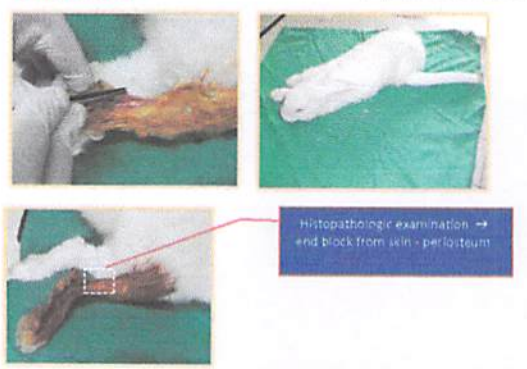
Procedures



Sample no. 1 — Procedures



Sample no. 1 — Procedures



Tang et al Grading of Adhesion

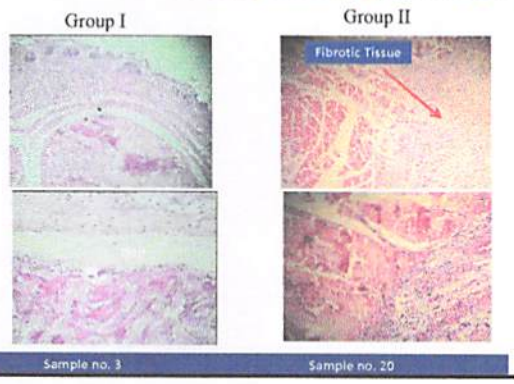
Result

Degree of adhesion according to Tang et al classification

Adhesion Degree \ Sample Group	Group I (Lyophilized Amniotic Membrane)	Group II (Control)
No adhesion	6	0
Mild Adhesion	11	0
Moderate Adhesion	0	8
Severe Adhesion	0	9

Significant difference $P < 0.001$ with Mann Withney test

Histopathological Result



Discussion

- Prevent the adhesion → tendon healing & gliding [1,24]
- Dominant intrinsic mechanism [21]
- Amniotic Membrane → Biological & mechanical [11,12,19]

Discussion

- Biomaterial → tissue engineering [19]
- Toda et al → Pluripotential cells [19]
- Collagen & Growth factor [19]
- Application : [11,39]
  →Opthalmology, ENT , plastic Surgery

Discussion

- Stark et al (1977) → synthetic mechanical barrier [33]
- Ozgenel et al (2001) → human amniotic fliud [24]
- Qingyi et al (2002) → fresh amniotic membrane [34]
- Higa et al (2006) → non imunigenic → suppresh HLA-A, B, D, DR and increase HLA G [25]

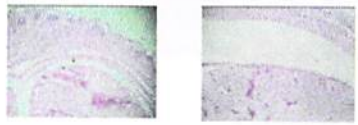
24. Ozgenel GY, Samli B, Ozcan M. Effect of fresh amniotic fluid on peritendinous adhesion formation and tendon healing after flexor tendon surgery in rabbits. J Hand Surgery. 2001; 26A: 2.
25. Higa K, Shimomura S, Matsuzaki J, Tsubota K. Hyaluronic acid-CD44 interaction mediates the adhesion of lymphocytes to amniotic membrane stroma cornea. 2001; 14: 266-272.
33. Stark H-H, Boyes J H, Johnson L, Ashworth C R. The use of porcelain, polyethylene film, or silastic sheeting to prevent restricting adhesion to tendon in the hand. J Bone Joint Surg Am 1977; 59: 909-91.
34. Qingyi H E, Bangli CHEN, Zhonkuan H, Li GPeng. Repair flexor tendon defect of rabbit with complex of fibroblasts and human autoacellular matrix (hAECM). J Clin Med. 2002; 15(5): 542-545.

Discussion

- Research Limitation
  - Short periode of observation
  - Evaluation = only histopathological grading

Conclusion

Lyophilized amniotic membrane has the good effect in preventing the peritendinous adhesion formation after tendon surgery



Proposition

- Further reseach with long time periode observation, healing and strength evaluation
- Further research to applicate the lyophilized amniotic membran in human tendon ruptures
- Molecular biology research

ありがとう