Robot-assisted Latissimus Dorsi Flap Breast Reconstruction

Gasless Technique of Robotic-assisted LD Muscle Flap Harvest

Presenter: Jae-Hyun Chung, M.D.
Corresponding Author: Eul-Sik Yoon, M.D., Ph.D.*
Chul Park, M.D., Ph.D., Duck-Sun Ahn, M.D., Ph.D., Seung-Ha Park, M.D., Ph.D., Byung-I Lee, M.D., Ph.D.

DEPARTMENT OF PLASTIC SURGERY
KOREA UNIVERSITY COLLEGE OF MEDICINE
ANAM HOSPITAL
SEOUL, KOREA

Nothing to disclose
Objective of This Study

- **Anatomy of LD muscle & Thoracic cavity**
  - LD muscle: *outside* of thoracic cavity (*narrow cavity*)
  - Thoracic cavity contains *critical organ*, lung and heart.

- **Risk of Carbon dioxide Gas Insufflation**
  - Intraoperative *hypothermia*
  - High *thoracic pressure*
    - ↓ pulmonary venous flow, cardiac output, respiratory compliance
  - *Acid-base imbalance* due to elevated PaCO2
  - Increased *post-op. complications*

Need for Gasless Technique !!!
Incision line
- Previous mastectomy scar
- 5~6cm vertical incision from the anterior axillary crease along the anterior axillary line.

Port insertion points

Zone I & II
- Zone I (manual dissection) : proximal to scapular tip
- Zone II (robotic dissection) : remained area
Vertical incision
Pedicle isolation
Muscle flap dissection

**Articulated Long Retractor**
- To maintain working space
- Attached to the operative bed
- Enable to dissect nearly anterior 1/3 (Zone I) of the muscle without endoscopic view despite more anterior skin incision.
4. ROBOTIC LD MUSCLE DISSECTION

1. Begins from the superoposterior border (C) along the **undersurface** in a clockwise direction.

2. Proceeds over the **superficial surface**.

3. Disinsert the muscle from the inferoposterior border (B).
HARVESTED LD MUSCLE FLAP
 RESULT

- Total 8 patients (M/F = 1/7)
  - Delayed reconstruction : 3 cases
    - 1 mastectomy (BCS) : breast deformity
    - 2 implant rupture + capsular contracture
  - Immediate reconstruction : 3 cases
  - Chest wall deformity : 2 cases (Poland syndrome)
  - Age : 19 ~ 51 yrs old (Median : 38 yrs old)
  - Mean BMI : 23.465 (20.2 ~27.8)
RESULT

- Mean docking time : 59 min
- Mean operative time : 407 min
- Mean robotic time : 101 min
- No major / minor complication
- Less Hospitalization : average 6.5 days
- Earlier Complete healing : average 13 days
What’s the INDICATION for the robotic LD flap?
1. Poland Syndrome

1. Defect of Pectoralis muscle
   - Muscle coverage is needed.

2. Congenital disorder (Young patients)
   - Good aesthetic result and Minimizing operative scar is very important.

Robotic LD muscle flap can be an absolute indication!!!
2. Implant failure

Capsular Contracture

- When changing implants, covering the new implants only with skin flaps is not enough.
  - Coverage of implant should be needed.
    a. TRAM is contraindication.
    b. Allogenic dermis is not enough to cover.

LD muscle flap is the treatment of choice!!!
3. Implant-based Reconstruction

- Breast skin envelope is intact.
  
a. Nipple-sparing mastectomy
b. Breast conserving surgery (BCS)
   • In the case of lateral lumpectomy defects
   • breast deformity
c. Delayed reconstruction using Expander-based reconstruction

LD muscle flap is substitute for the allogenic dermis.
CASE I  F/19
POLAND SYNDROME, LT.
CASE II   F/38
IMMEDIATE RECON., RT.
CONCLUSION

- The gasless technique of robot-assisted LD muscle flap using the articulated long retractor is safer and less complex technique than previous method.

- For young patients, especially in a case like Poland syndrome, this method would be suggested as an absolute indication.

- Capsular contracture, Implant-based reconstruction and partial breast reconstruction can be a relative indication.