A SECURE TECHNIQUE FOR MICROVASCULAR ANASTOMOSIS IN ARTERIES WITH INTIMAL DISSECTION: INTIMAL SLEEVE FOLD-OVER TECHNIQUE

Tung-Ying Hsieh, Yu-Hao Huang, Feng-Shu Chang, Chih-Hau Chang, Ko-Kang Chen, Shu-Hung Huang, Chung-Sheng Lai, Sin-Daw Lin, Kao-Ping Chang*

Division of Plastic and Reconstructive Surgery, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan

*Corresponding author

Taiwan

Disclosure of Relevant Financial Interests for All Authors: “Nothing to disclose.”

Tung-Ying Hsieh, MD,

Address: Division of Plastic and Reconstructive Surgery

Kaohsiung Medical University Hospital

100 Shih-Chuan 1st Road

Kaohsiung 807, Taiwan

Tel: (O) 886-7-3121101 Ext 7675

Fax: (O) 886-7-3111482

E-mail: photopigment@gmail.com

Background

- Intimal dissection can cause an irregular internal surface with intimal flaps and subendothelial collagen exposure. This has been associated with a high risk of thrombosis.

- Trimming the artery to a healthy level is routinely recommended to avoid intimal dissection. However, this method is **limited when there is inadequate vascular length** to work with.

Tung-Ying Hsieh E-mail: photopigment@gmail.com

Methods

- We dealt with an artery exhibiting severe intimal dissection by using a new suture technique: **the intimal sleeve fold-over technique** (Figure 1&2).

- Severe arterial initimal dissections were observed in 6 of 130 (4.6%) arterial microvascular anastomoses in free flap reconstruction for oral cancer patients from January 2013 to December 2013.

Tung-Ying Hsieh E-mail: photopigment@gmail.com

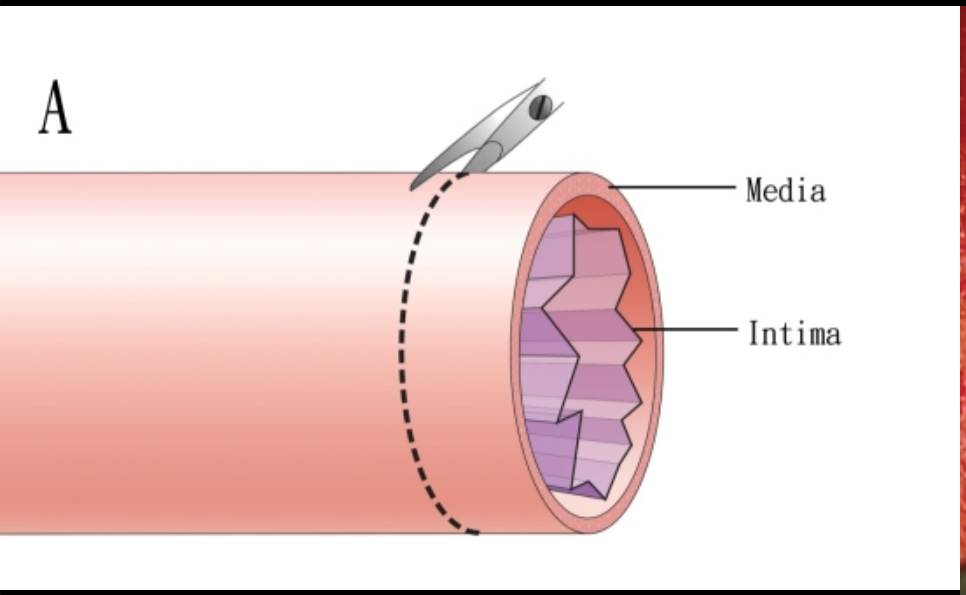
Step 1:
Circumferential excision of the media layer

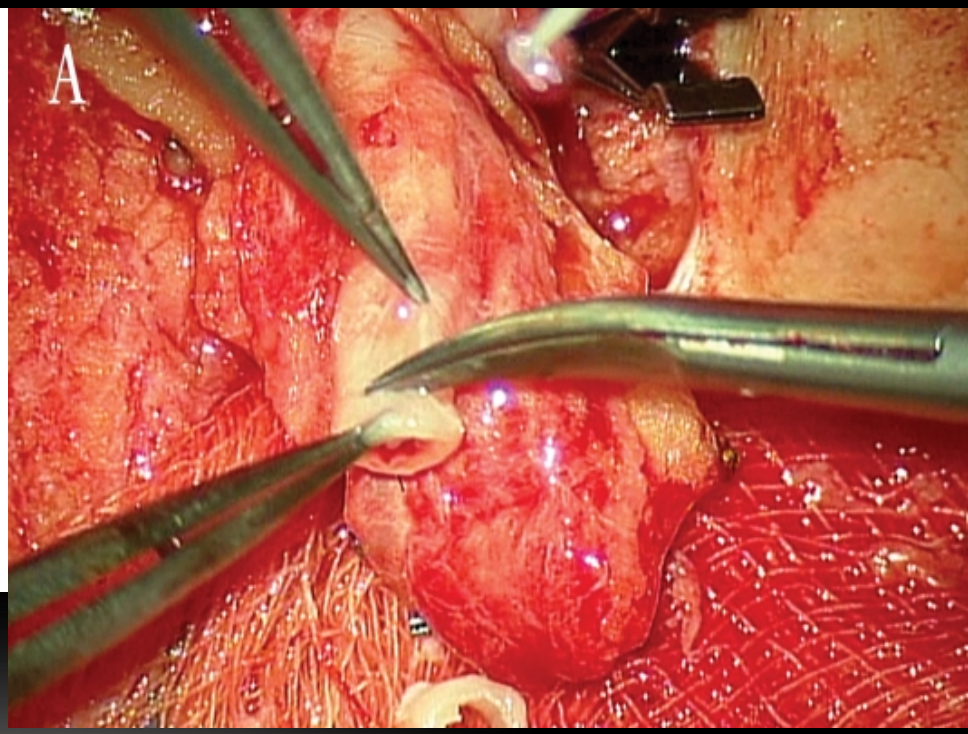
- We removed a small end portion of the media layer circumferentially to expose the intima. The goal was to fold the intima layer inside out; thus, we sufficiently trimmed the media layer circumferentially.

- This was easily accomplished without injuring the intima because the dissection of the media and intima layers were clearly discernible.

Tung-Ying Hsieh E-mail: photopigment@gmail.com

Step 1:
Circumferential excision of the media layer





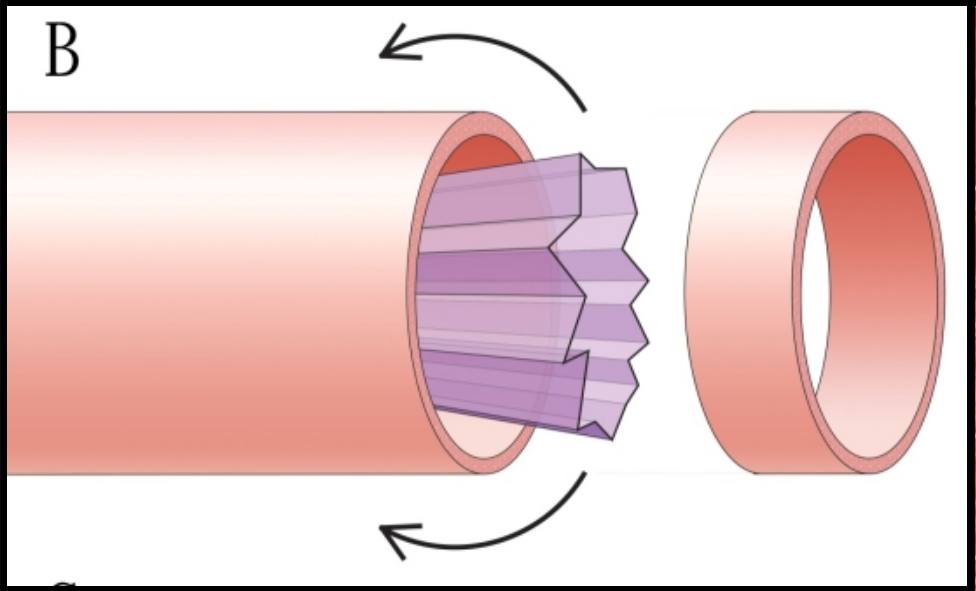
Tung-Ying Hsieh E-mail: photopigment@gmail.com

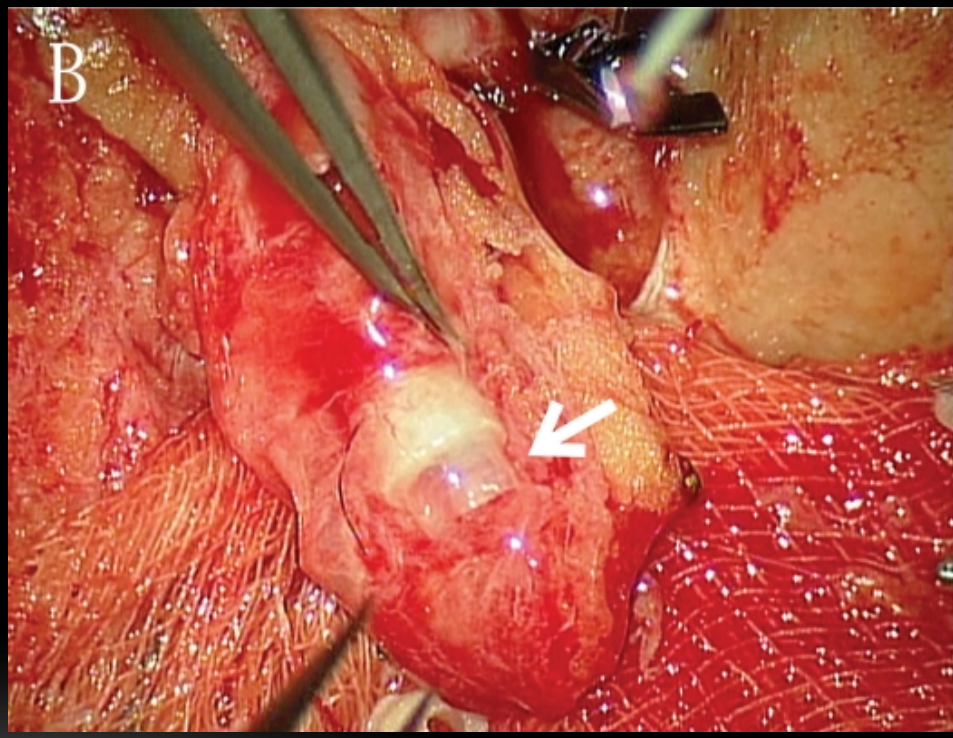
Step 2: Fold-over intimal sleeve

- We simply folded the intima over the media, similar to folding over a shirt sleeve. This allowed the 2 layers of tissue to remain in close contact.

Tung-Ying Hsieh E-mail: photopigment@gmail.com

Step 2: Fold-over intimal sleeve





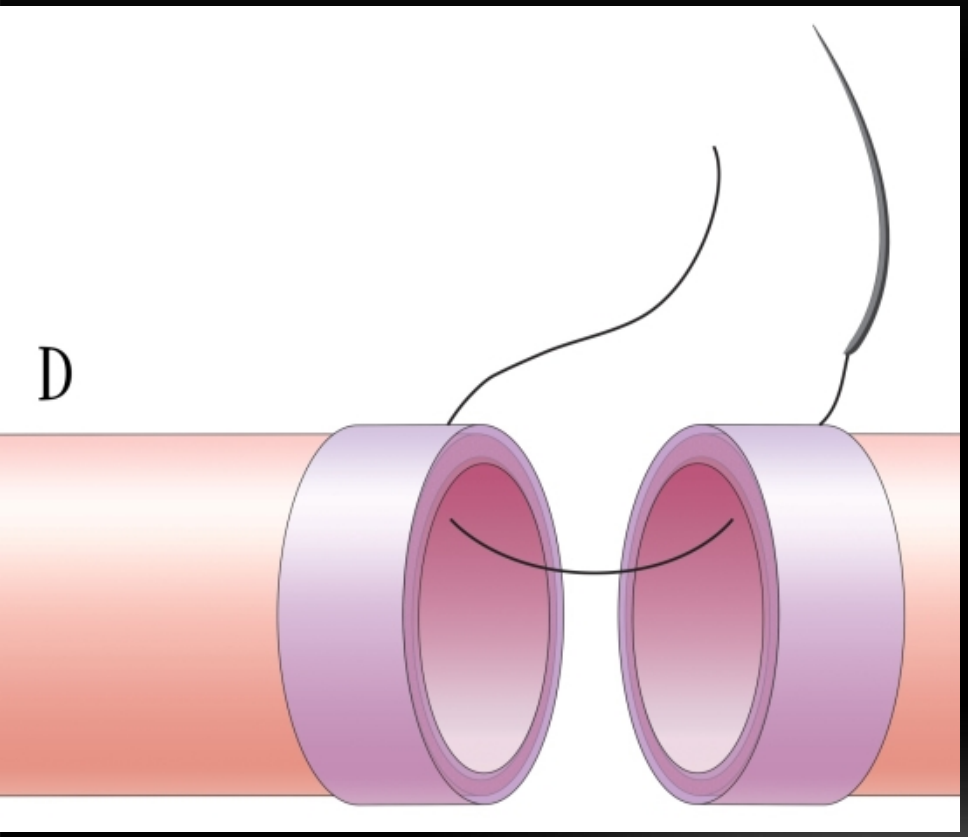
Tung-Ying Hsieh E-mail: photopigment@gmail.com

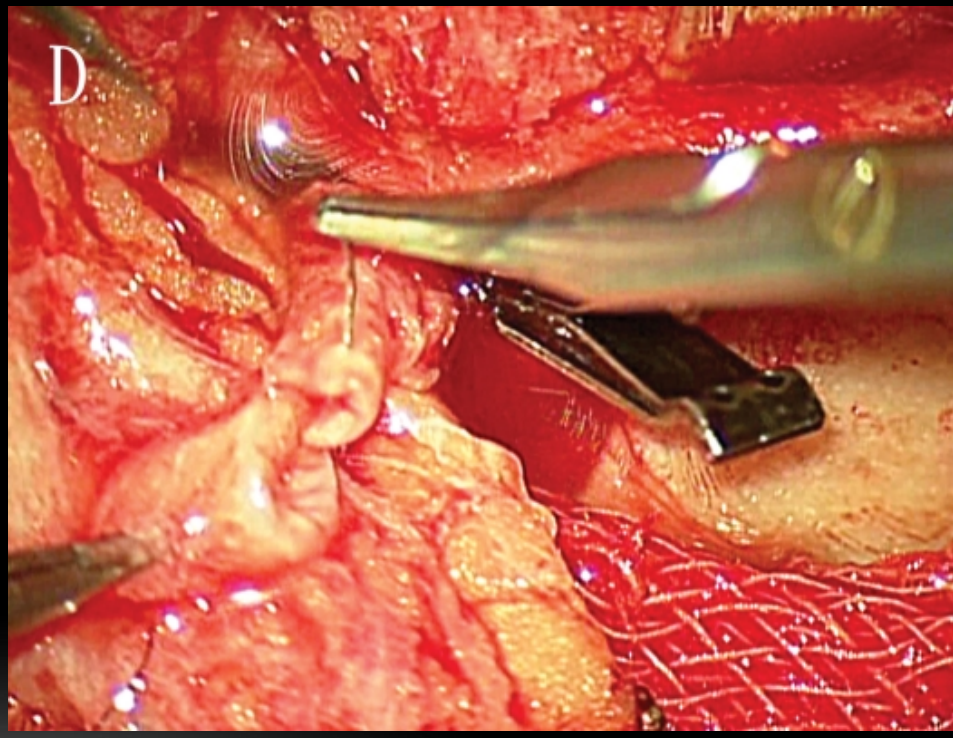
Step 3: Anastomosis

- A normal vascular anatomy was obtained using the fold-over technique by tenting the undulating intima to the media. We performed microvascular anastomosis, similar to normal vascular anatomy, which produced minimal turbulence and anastomosis failure.

Tung-Ying Hsieh E-mail: photopigment@gmail.com

Step 3: Anastomosis





Tung-Ying Hsieh E-mail: photopigment@gmail.com

Results

- All six patients were discharged as scheduled without perioperative problems and complications during following up.
- The mean diameter of the recipient and pedicle arteries with intimal dissection were 2.13 and 2.20 mm.
- The mean time for performing sleeve fold-over procedure of on each artery was **5.1 min.**

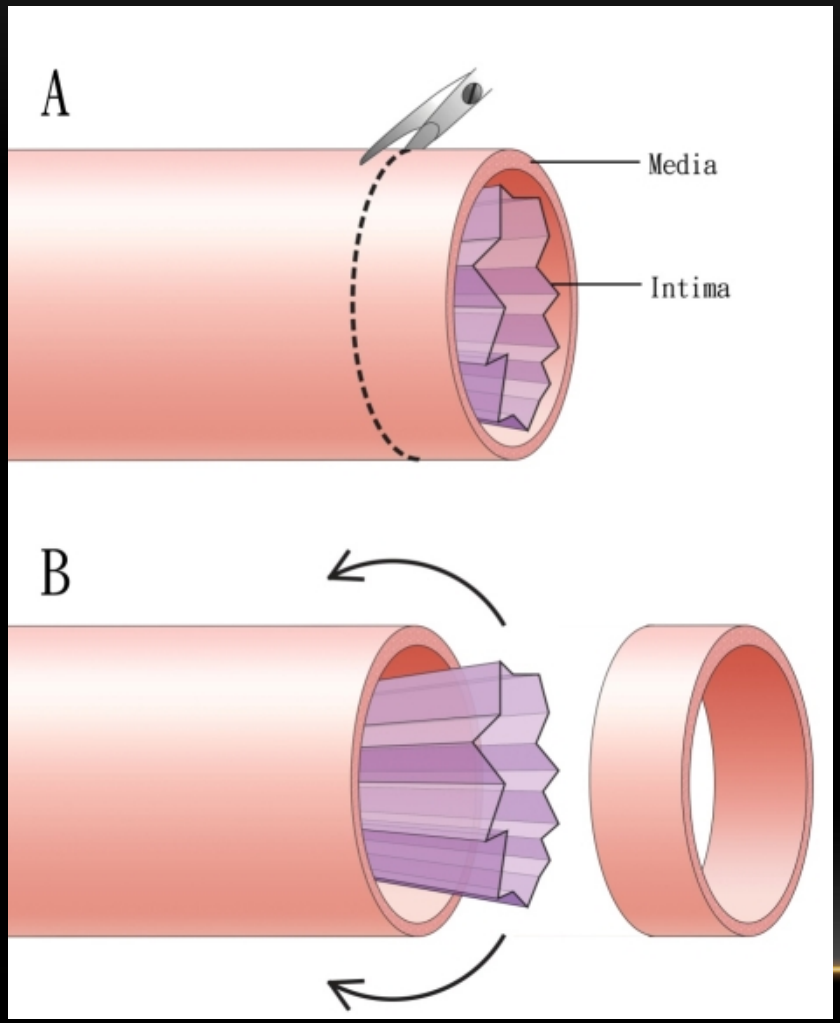
Tung-Ying Hsieh E-mail: photopigment@gmail.com

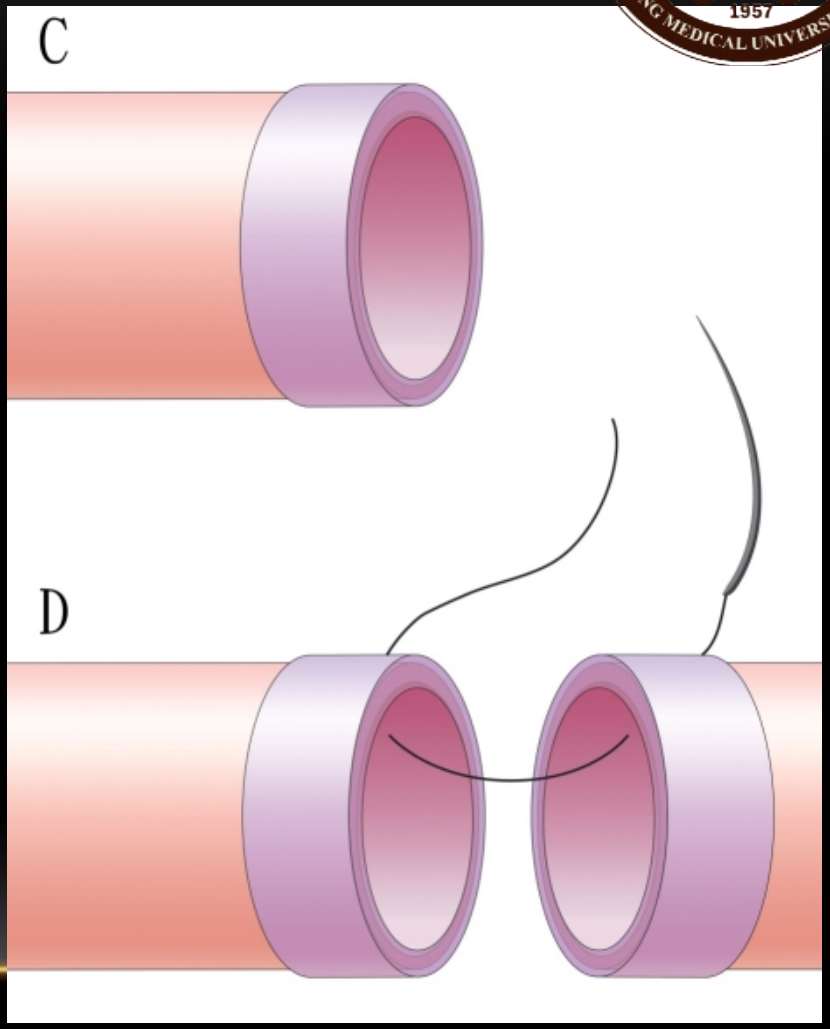
Conclusions

- A secure intima-to-intima contact can be achieved using this technique. This technique can provide an alternative method to **intimal dissection** when the length of the artery is limited.

Tung-Ying Hsieh E-mail: photopigment@gmail.com

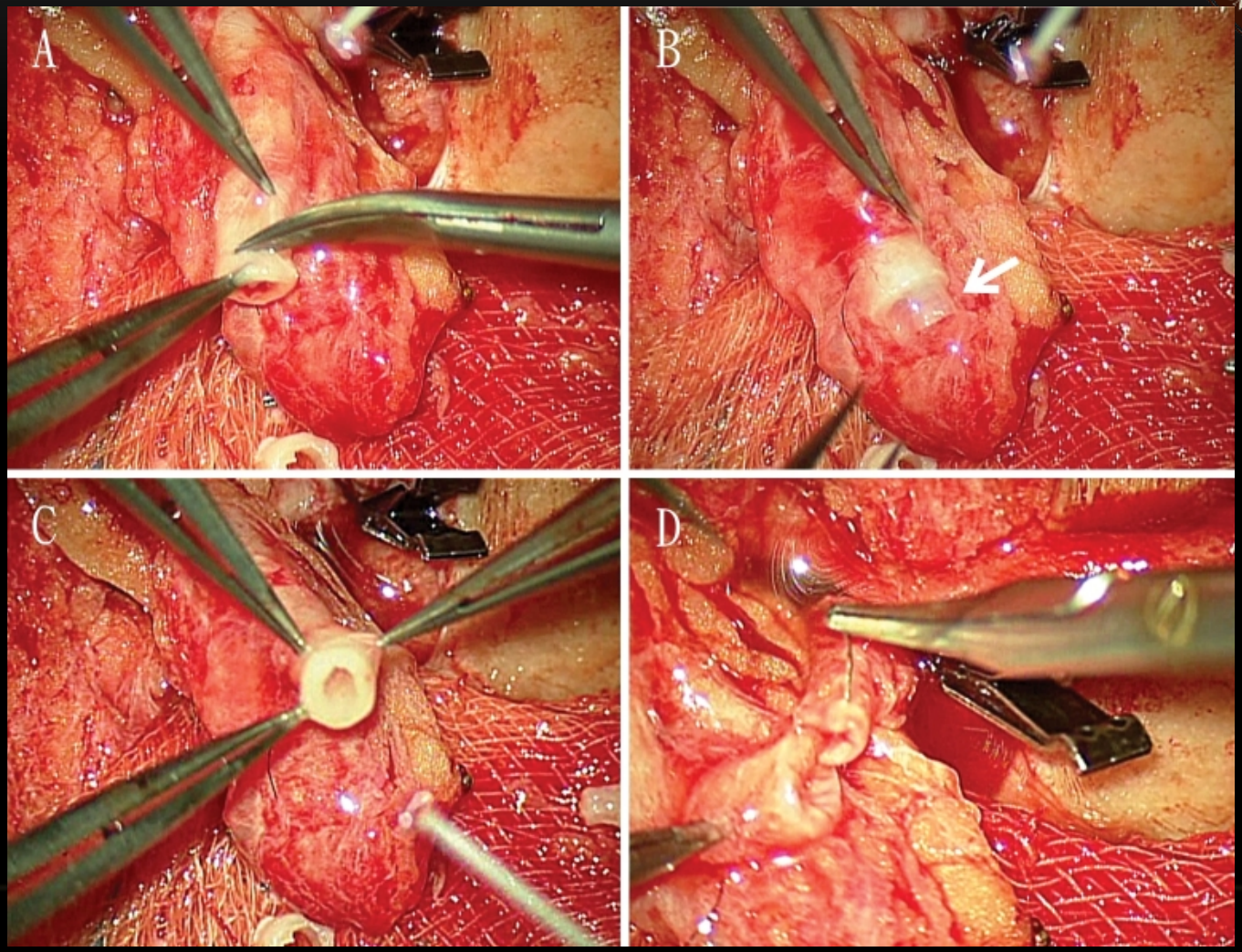
Figure 1





Tung-Ying Hsieh E-mail: photopigment@gmail.com

Figure 2



Tung-Ying Hsieh E-mail: photopigment@gmail.com