

Simple Robotic Myxoma Resection Using An Ultrasonic Aspirator System

Yoshitsugu Nakamura, Kasumi Tamagawa, Yuka Higuma, Kusumi Niitsuma, Yuto Yasumoto, Miho Kuroda, Ken Niitsuma, Taisuke Nakayama, Satoshi Okugi, Miku Konaka, Yujiro Ito

Department of Cardiovascular Surgery, Chibanishi General Hospital, Chiba, Japan

BACKGROUND and Objective

Myxomas can be visualized with robotic assistance, however, their gelatinous, fragile nature makes them prone to damage, risking embolism or metastasis. Complete resection with the endocardial attachment is ideal but challenging in large tumors, especially with robotic tools and small incisions. We present a novel robotic approach using the Sonopet iQ Ultrasonic Aspirator (Stryker) (**Figure 1, A**). The aim of this study is to assess feasibility and safety of the robotic myxoma resection using the Sonopet iQ Ultrasonic Aspirator.

CPB and ROBOTIC PORTS SETUP

Under general anesthesia with single-lung ventilation, a 3-cm working port, also used for the camera, was placed in the 4ICS at the anterior axillary line. Robotic ports were inserted in 3 and 6 ICS, and a retractor port was placed via an areolar incision (**Figure 1, B**)

SURGICAL TECHNIQUE

Figure 2,

A. Atriotomy & Exposure

Right-sided left atriotomy; tumor exposed with robotic retractor. Flexible suction inserted for a bloodless field.

B. Sonopet application

Sonopet inserted via working port. Under robotic assistance, the device was applied to the myxoma for fragmentation and aspiration

C. Tumor Debulking

After most of the myxoma was debulked, a roughly 1-cm core of the elastic hard tumor core remained

D. Base Excision

Residual 1-cm core excised with 5-mm full-thickness margin.

E. Additional Resection

Extra circular excision added if margin insufficient.

F. Completion of the tumor resection

Setting of Sonopet iQ

Ultrasound power	50%
Suction pressure	70%
Irrigation rate	15 mL/min

SURGICAL TECHNIQUE

Figure 1: Sonopet iQ Ultrasonic Aspirator (Stryker)

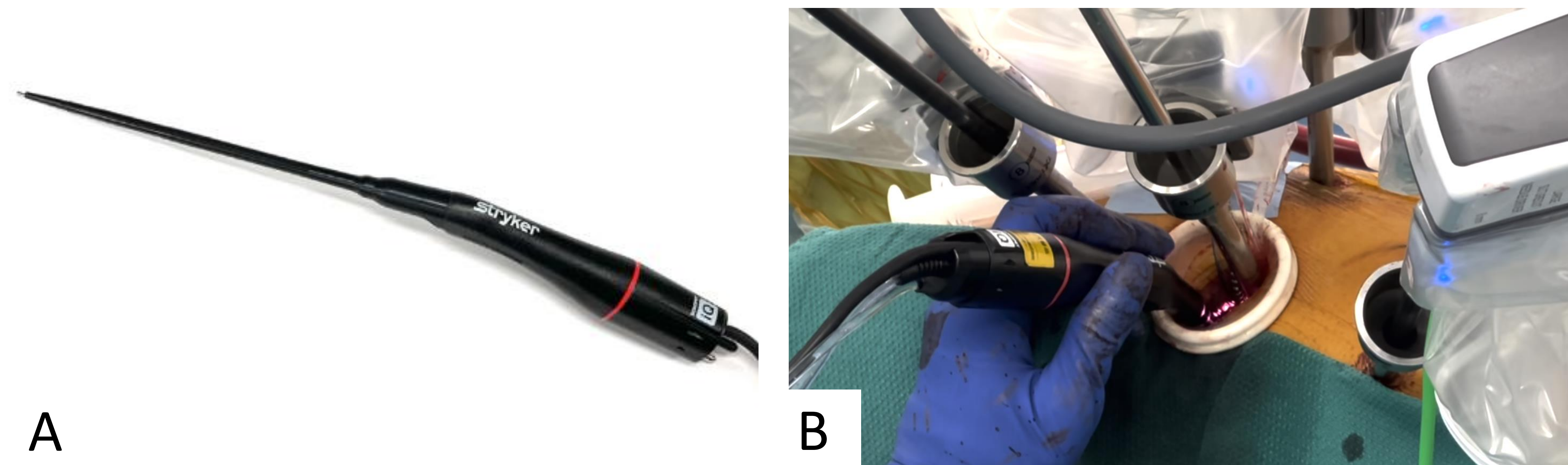
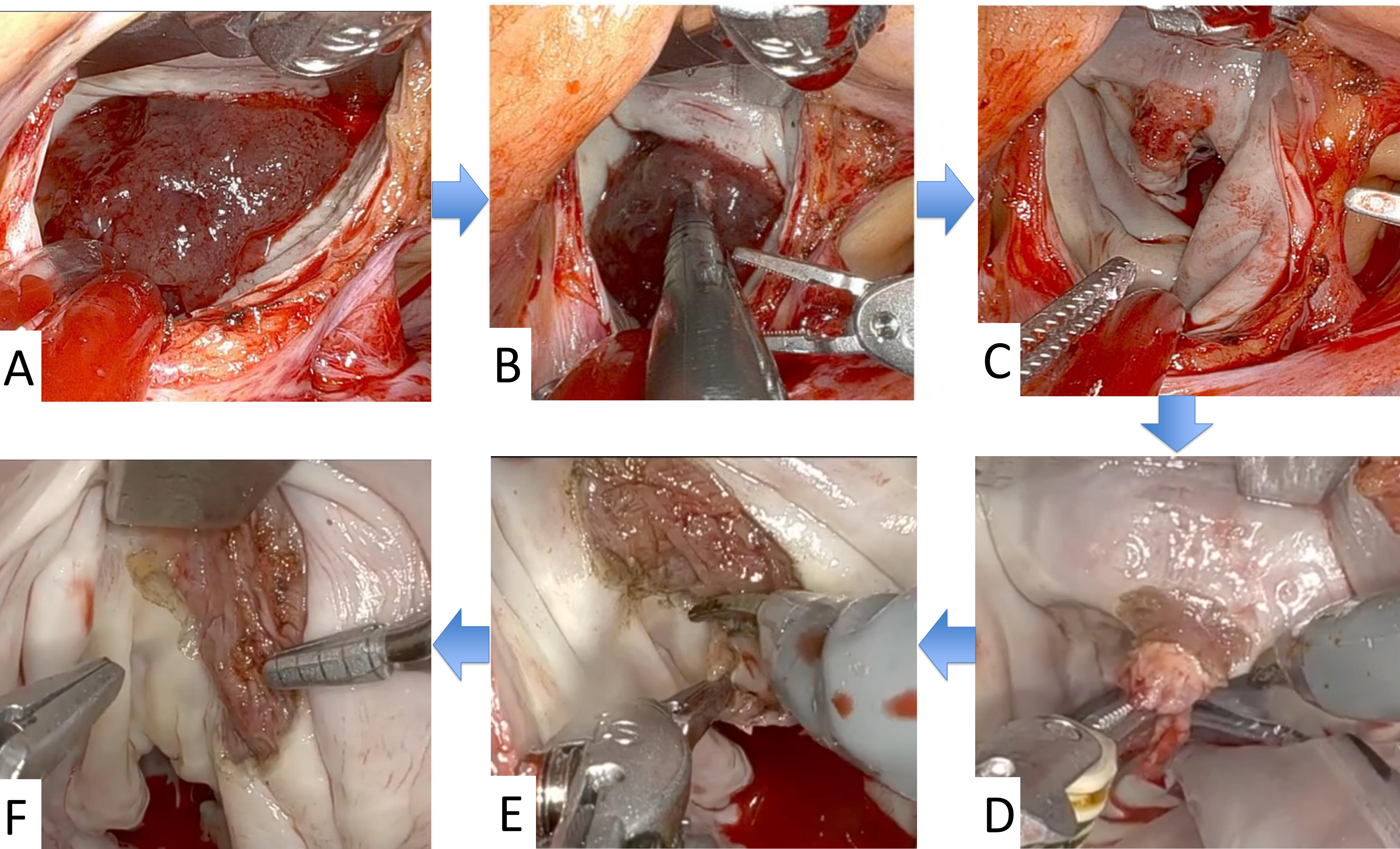


Figure 2: Intraoperative view of myxoma resection



PATIENTS

We used this technique in 5 cases (4 cases with the left atrial myxoma and 1 case with the right atrial myxoma).

RESULTS

Surgical details	N = 5
Total time (min)	160 +/- 15
CPB time (min)	103 +/- 14
Cross-clamp time (min)	57 +/- 8
Mortality	0
Echo results	N = 5
Complete resection of the tumor	5 (100%)
New intra-atrial communication	0
Conduction system disorder	0

DISCUSSION

Advantages of the technique:

- Simple and easy to perform
- No need to grasp the tumor → reduces risk of residual fragments
- Endocardial attachment becomes visible after aspiration → ensures adequate resection
- Skin incisions remain small

CONCLUSION

Using Sonopet iQ for robotic resection of cardiac myxomas is simple, safe, and reliable.

Reference:

Robotic myxoma resection using an ultrasonic aspirator system
Nakamura Y, et al. JTCVS technique 2024