Endoscopic sinus surgery (ESS) has become widespread as a standard surgical method for chronic rhinosinusitis (CRS). Radical and thorough as well as appropriate removal of the sinus pathology leads the patient recovery from the disease. On the other hand, inappropriate and rough manipulation during the surgery may cause major complications such as orbital injury and CSF leakage. Especially, prevalence of orbital injury which resulted in permanent orbital dysfunction has been increasing.

Key points for safer and proper surgery are as follows,
1. Understand anatomy, especially anatomical relations of basal lamellas and ethmoidal air cells.
2. Examine pre-op CT, then image “3D” structure.
3. Keep a clear and proper field of endoscopic view.
4. Suitable choice of instruments.
5. Use microdebrider properly.
6. Know about the complications which actually occurred, and then learn how to prevent it.

The choice of instruments is important not only for a safe and accurate operation but also for smooth post-op healing process. There are many types of forceps, but through-cutting forceps are primarily used. They are preferred for effective preservation of mucosa and for prevention of injury. Microdebrider is very useful tools for smooth mucosal healing. OR time becomes shorter, and the stress for the patients are less. However, this “powered instrument” always have some risk of orbital and cranial complications. Moreover, these complication tend to progress rapid.

In this lecture, concept and techniques of our ESS is presented.
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ARSR-S5-2  Keynote Lecture: Prelacrimal approach versus conventional surgery for inverted papilloma in the maxillary sinus

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Objectives: Prelacrimal approach has recently been applied for inverted papilloma (IP) in the maxillary sinus. We previously reported one of the prelacrimal approaches, endoscopic modified medial maxillectomy (EMMM). EMMM provides access to the maxillary sinus identically to conventional EMM, despite preservation of the inferior turbinate and nasolacrimal duct.

Methods: We retrospectively reviewed the patients with IP in the maxillary sinus to compare the surgical results by ESS and/or Caldwell-Luc (conventional approach) vs EMMM at different timepoint.

Results: Eighteen patients were performed conventional approach, and 28 performed EMMM. The clinical characteristics in both groups were similar. All the patients belong to T3 based on Krouse staging system and the average follow-up time were 45.5 months. Of the 18 patients with conventional group, recurrence was seen in 3 patients (16.6%). Whereas, no recurrence was seen in 28 patients with EMMM. No postoperative complication was seen in EMMM group.

Conclusions: EMMM is an effective surgical approach and reduces the recurrence for inverted papilloma in the maxillary sinus. In addition, EMMM is a less complicated method than other prelacrimal approaches.

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Curriculum vitae

Education: Graduated at Jikei Medical university in 1985.
Became Prof and Chairman of Dokkyo Medical University in 2006.
Professional Experience: Training of Endoscopic sinus surgery was made in Jikei University Hospital for more than 20 years.
During 1990-1992, the research of middle ear mucosa similar to sinus mucosa was studied in Minnesota University.
Professional Society: Japan Otorhinolaryngologic Society : Board member
Japan Rhinologic society: President
Major Interest: Pathological condition of the upper airway, specially eosinophilia and Endoscopic sinus surgery
ARSR Symposium 5

ARSR-S5-3 Keynote Lecture: Endonasal approach for Meckel’s cave and foramen rotundum

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Meckel’s Cave located in petrous apex and surround by temporal lobe meningeal, trigeminal nerve and intercavernous carotid artery. This area had very complex anatomy and had surgical challenge. This area can approach by many routes eg. Endonasal approach, Transorbital approach, frontotemporal approach, orbitozygomatic approach, Subtemporal transpetrosal-transtentorial approach with anterior petrosectomy (Kawase-Shiobara approach). Endoscopic endonasal approach is more feasible from surgical knowledge, instruments and surgeon’s expertise, this technique had less brain manipulation and no external incision. The Foramen Rotundum is one of landmark for approach to the Meckel’s cave and use for define infratemporal fossa, middle cranial fossa and pterygopalatine fossa. There are few cases reports of spontaneous CSF leak from Foramen Rotundum which requires surgical management. Some case of tumor can spread from these compartments. This session we would like to share our experience in surgical of Meckel’s cave and Foramen Rotundum.

Curriculum vitae

Education
MD. Faculty of Medicine, Ramathibodi Hospital, Mahidol University Otolaryngology Head and Neck Surgery
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Affiliations/Memberships
•Member of the Royal College of Otolaryngology head and neck surgeons of Thailand
•Executive committee of Thai Rhinologic Society
•Honorary Member of Thai Endocrine Surgeons Society

Interests
•Advance Sinus Surgery and anterior skull base surgery
•Advance Head and Neck Surgery
•Endoscopic thyroidectomy
•Robotic Surgery
•Sialendoscopy
**ARSR Symposium 5**

**ARSR-S5-4 Predictors of disease progression after endoscopic sinus surgery in patients with chronic rhinosinusitis**

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Objective: This study aimed to determine adverse predictors after endoscopic sinus surgery (ESS) in patients with chronic rhinosinusitis (CRS), using our proposed operating (OP) scoring and postoperative endoscopic appearance (PEA) scoring systems.

Patients and Methods: Between 2007 and 2017, 281 adult patients with bilateral CRS undergoing primary ESS, who could be endoscopically evaluated after 12 months or more, were retrospectively analyzed. Patients were divided into eosinophilic CRS (ECRS, n = 205) and non-ECRS groups (n = 76). To determine postoperative exacerbation factors in sinonasal condition, the PEA score was clinically analyzed in relation to the pre- and intra-operative findings by multiple regression analyses.

Results: In analysis of changes of the PEA scores, the postoperative courses of ECRS showing similar to the early period < 12 months for non-ECRS significantly deteriorated over time after 12 months (p < 0.001). Especially, frontal sinus polyps recurred in the early period in ECRS. Young adult, asthma, high CT score, and frontal sinus polyps were shown as significant adverse predictors in multivariate analyses in ECRS.

Conclusion: This study suggests that complete pneumatization of the frontal sinus drainage pathway without any residual cells could be important for the maintenance of sinonasal condition, especially in younger adult patients with ECRS accompanying asthma. Early appropriate estimation of sinonasal condition appears to be important for the successful surgical management in CRS.

**ARSR-S5-5 Extent of endoscopic sinus surgery for eosinophilic chronic rhinosinusitis cases with asthma**

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Introduction: Eosinophilic chronic rhinosinusitis (ECRS) is known as refractory sinusitis with nasal polyps showing remarkable eosinophil infiltration. ECRS cases with bronchial asthma including aspirin exacerbated respiratory disease (AERD) are classified as severe type, and multiple ESS may be required. We have applied extended ESS to severe ECRS cases to overcome conventional ESS. The surgical procedures and the outcome are demonstrated in this study.

Cases & methods:

Extended ESS of both the frontal and the ethmoid sinuses was performed on 27 severe ECRS cases. 9 AERD cases were included.

All operations were performed under general anesthesia in Kamio Memorial Hospital. Submucous resection of the nasal septum cartilage and the inferior turbinate bone were done. Thick and edematous medial inferior turbinate mucosa was sacrificed because of severe allergic reaction. Extended ethmoid surgery as a new approach we advocated aims to extend the middle nasal meatus laterally. From the lateral to the anterior part of the middle nasal meatus was punched and/or drilled out up to the nasolacrimal duct to clearly open the lateral ethmoid and frontal recess cells. Draf IIb surgery was then performed to obtain postoperative pathway to the frontal sinus. The first branch of the olfactory nerve was identified if necessary.

Outcomes and conclusion:

Postoperative CT and endoscopic scores 1 year after surgery remarkably reduced from 60.2 to 14.6 and 14.0% respectively although long-term follow-up study is necessary. Our extended ESS is acceptable for severe ECRS.
**ARSR Symposium 5**

**ARSR-S5-6  Effectiveness of budesonide irrigation after FESS**

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College of Medicine, China Medical University, Taichung, Taiwan.

**Introduction:** Chronic rhinosinusitis is a common inflammatory disease of the nasal mucosa. Successful rate of Functional Endoscopic Sinus Surgery (FESS) is about 85%. Current mainstay of medical therapy for chronic rhinosinusitis after surgery is sinus irrigation, topical or systemic steroid, systemic antibiotics. Budesonide nasal irrigation was introduced for postoperative management of patients with chronic rhinosinusitis.

**Objective:** Our study investigated effectiveness of budesonide irrigation in patients with chronic rhinosinusitis after FESS.

**Materials and Methods:** This is a prospective case-control study. We included patients with bilateral chronic rhinosinusitis post FESS, Lund-Mackay score >6 each side, complete 12 weeks Budesonide to large-volume, low-pressure saline sinus irrigation and complete SNOT-22 special sheet. We matched control group for age, gender, smoking condition, deviated nasal septum, Lund-Mackay score, allergic rhinitis and hypertension history. Study group used Budesonide 1mg add into Sodium Chloride & Sodium Bicarbonate mixture in 240cc distilled water or boil tap water for sinus irrigation. Control group used Sodium Chloride & Sodium Bicarbonate mixture in 240cc distilled water or boil tap water for sinus irrigation. We used t-test for outcome analysis.

**Results:** Our study included total 28 patients. SNOT-22 of two groups showed significant difference for thick nasal discharge.

**Conclusions:** Budesonide group saline irrigation significantly different in efficacy than saline controls on SNOT-22 thick nasal discharge outcome. Large, double-blinded, randomized controlled trials needed to clarify the effectiveness of budesonide nasal irrigation in chronic rhinosinusitis patients.