

原文題目(出處)：	Sialoendoscopically assisted open sialolithectomy for removal of large submandibular hilar calculi. J Oral Maxillofac Surg 2010;68:68-73
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報告日期：	2010.4.12

內文：

Abstract：

- Purpose：clinical efficacy of sialoendoscopically assisted open sialolithectomy for the removal of large submandibular hilar calculi → avoid sialoadenectomy
- Materials and Methods: patients with sialolithiasis scheduled for sialoendoscopic surgery performed with sialoendoscopically assisted open sialolithectomy
- Results: 78 consecutive patients with submandibular sialolithiasis,
  - 18 → sialoendoscopically assisted open sialolithectomy
  - 17 patients, large hilar sialoliths→ sialoendoscopically assisted open sialolithectomy
  - 1 patient with multiple sialoliths→ open sialoadenectomy
  - 3→Temporary numbness of the tongue for 1 week postoperatively
  - 18 months follow up without any symptoms or signs of recurrence.
- Conclusions: sialoendoscopically assisted open sialolithectomy is an effective and safe surgical technique to remove large submandibular hilar calculi.

Introduction：

- Obstructive salivary gland disease
  - one of the most common problems afflicting the salivary glands
  - a major cause of salivary gland dysfunction and sialoadenectomy.
- A sialolith located in Wharton’s duct is the most frequent cause of submandibular obstruction and consequent acute or chronic infection.
- Conservative therapeutic approaches
  - gland massage, sialagogues (eg, chewing gum, sour drops) and antibiotics
  - can only ease the symptoms.
- Traditionally, sialoadenectomy was always indicated for these patients.
- During the past decade, sialoendoscopy has been introduced as a minimally invasive surgical procedure for the diagnosis and treatment of salivary ductal diseases.
- Advantage of sialoendoscopy
  - surgeons can visualize the duct lumen and the pathologic features,
  - making the diagnosis according to the endoscopic findings.
  - interventional approaches can then be performed to eliminate the obstruction or dilate the duct.
  - preservation of the salivary gland with relief of symptoms in most patients.
- However, the field of sialoendoscopy is still in its infancy. It is a technically demanding procedure and has some limitations.
  - the management of large hilar calculi.
  - A sialolith larger than 1 cm is always impossible to remove intraductally using Sialoendoscopy and is the main cause of surgical failure.
- The aim of the present study was to investigate the clinical efficacy of sialoendoscopically assisted open sialolithectomy for removal of large

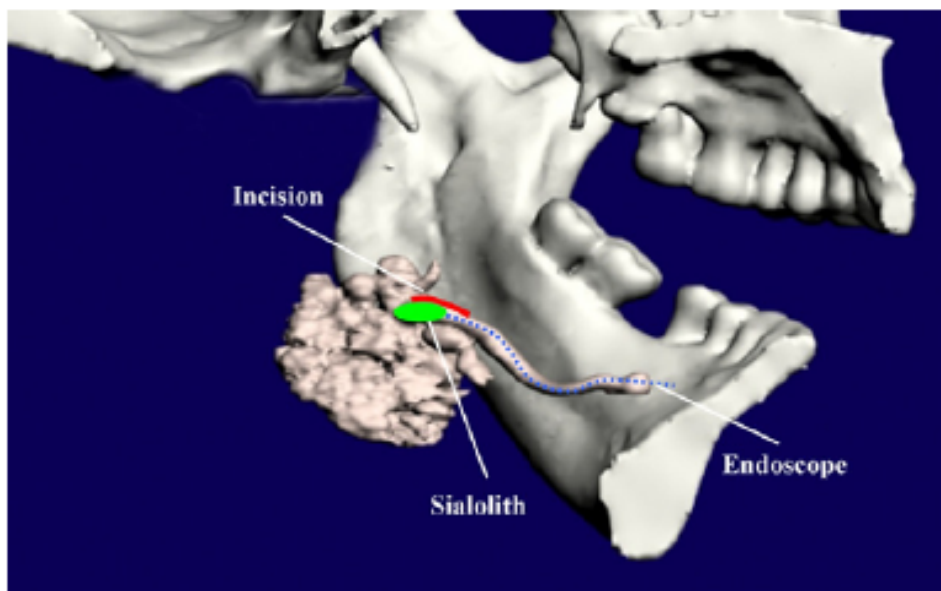
submandibular hilar calculi to avoid sialoadenectomy.

#### (1) ENROLLMENT AND PATIENT CHARACTERISTICS

- From August 2005 to October 2008, 78 consecutive patients with submandibular sialolithiasis underwent sialoendoscopic surgery at Sun Yat-Sen University Guanghua School of Stomatology, Guangzhou, China..
- When we failed to remove large submandibular hilar stones intraductally → sialoendoscopically assisted open sialolithectomy.
- The clinical characteristics, pre- and intraoperative data, outcomes, and complications were evaluated prospectively.

#### (2) SURGICAL TECHNIQUE

- Sialoendoscopic procedures : Semirigid, moderately flexible sialoendoscopes for the surgery under local anesthesia. → intraductal extraction using a wire basket, grasping forceps, and/or balloon catheter.
- Sialoendoscopically assisted open sialolithectomy : for large stones, especially those located in the hilum, were always connected to the ductal wall and could not be released intraductally using sialoendoscopy.



#### (3) FOLLOW-UP

- Encouraged to massage the affected glands and to stay well hydrated.
- Clinical outcomes were evaluated according to the patients' symptoms and physical examination and radiographic imaging findings.
- The median follow-up period was 18 months (range, 1 to 38).

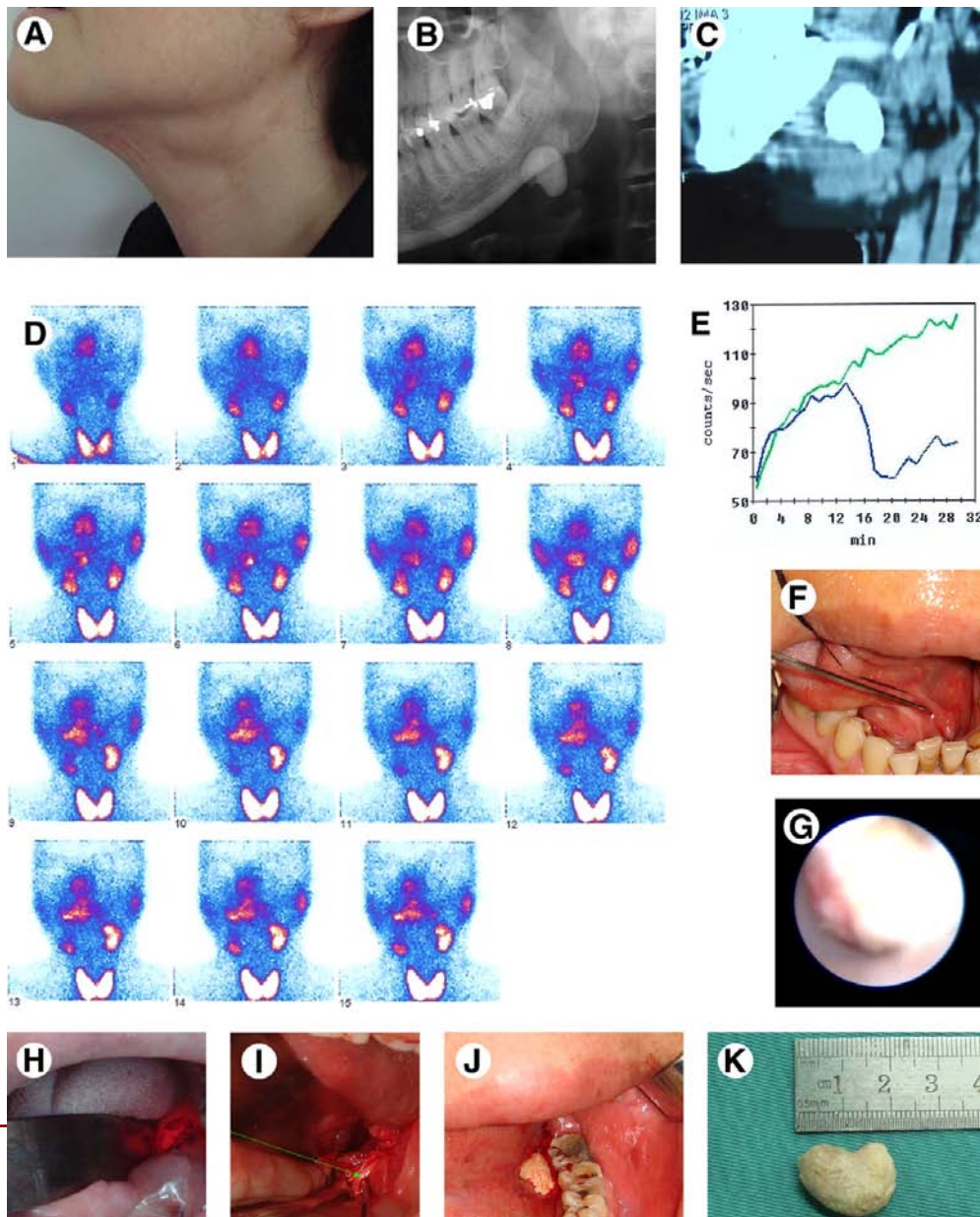
#### (4) Results

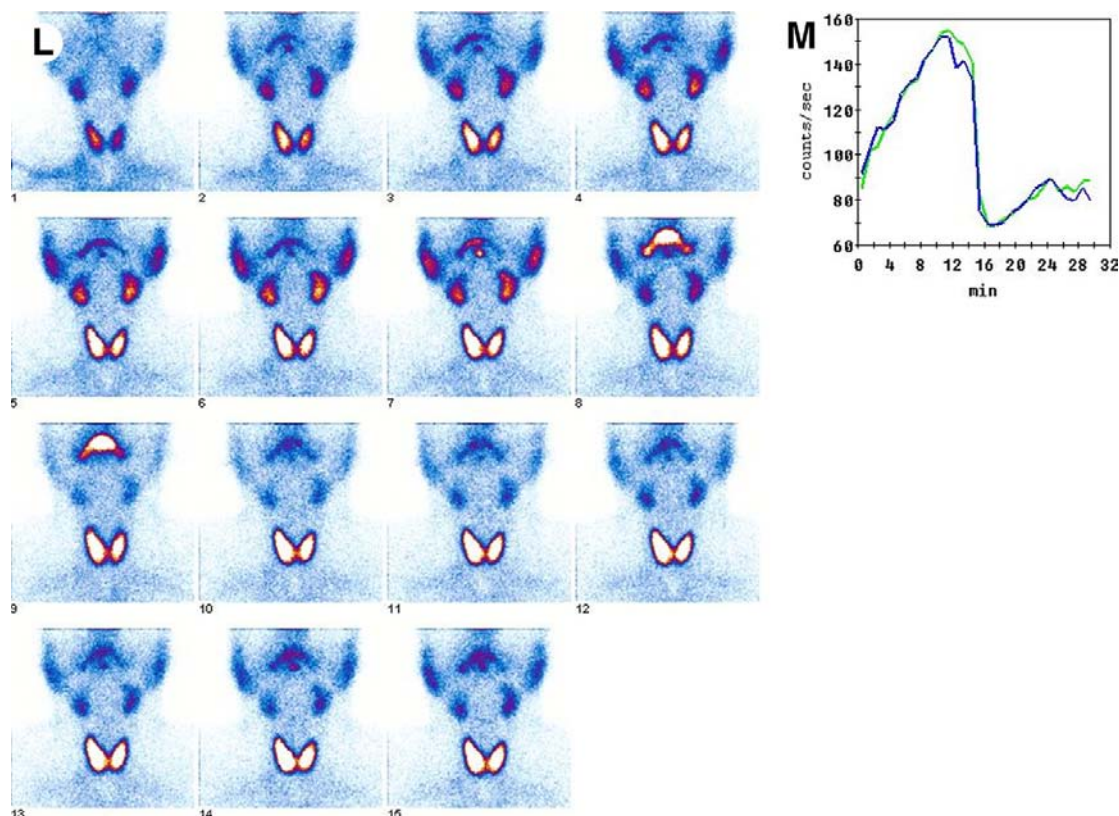
- 78 consecutive patients with sialolithiasis,
  - 18 were treated with sialoendoscopically assisted open sialolithectomy immediately after failure of intraductal extraction of large submandibular hilar calculi.
- For 17 patients, large hilar sialoliths were successfully removed. The median diameter of the removed stones was 1.5 cm (range 0.8 to 2.5).
- 1 patient with submandibular multiple sialoliths → converted to open sialoadenectomy.

- The success rate of sialoendoscopically assisted open sialolithectomy was 94.4%.
- One patient had a postoperative infection, and 3 developed temporary numbness of the tongue for 1 week postoperatively, and recovered completely without additional intervention. (Complication rate was 23.5%.)
- During follow-up, all 17 patients were symptom free, and no recurrence was documented.
  - The orifice in 11 patients → clear saliva
  - The orifice in 6 patients→ little or no saliva

(5) CASE REPORT

- A 40-year-old woman presented with repeated episodes of left submandibular gland swelling of 8 years' duration.
- The panoramic radiograph and computed tomography scan showed radiopacity in the hilar area.
- At the 1-year follow-up visit, clear saliva could be observed from the orifice of Wharton's duct of the left submandibular gland.
- Scintigraphic assessment revealed that the excretion function of the left submandibular gland had been restored to normal, and the bilateral glands had equivalent function
- The patient was followed up for 30 months with no evidence of recurrence.





#### (6) Discussion

- Obstructive salivary gland disease continues to be the leading indication for sialoadenectomy.
- Previous studies have revealed that 62% to 80% of submandibular gland excisions result from sialolithiasis.
- Sialoadenectomy can eradicate the obstructive symptoms.
  - Postoperative complications
  - facial nerve injury,
  - obvious functional and cosmetic impairments
- Long-term complications developed in 25.3% of patients after excision of the submandibular gland. (By Berini-Aytes and Gay-Escoda.)
- The common concept that irreversible gland dysfunction would occur in the presence of obstructive diseases with a long course
  - high rate of sialoadenectomy
- A recent study → a significant increase occurs in the functional fraction and the excretion rate of the gland after intraoral open removal of salivary calculi.
- A histopathologic study→ submandibular glands removed for sialolithiasis demonstrated that a significant percentage of the glands exhibited normal histologic findings.
- sialoadenectomy might be overtreatment of ductal disorders, and a conservative attitude toward salivary ductal obstruction appears justified.
- Our recent study using the saliva flow rate test and scintigraphic examination
  - demonstrated that glandular function recovery after sialoendoscopic management of obstructive salivary gland disease is possible and satisfactory.
- However, large hilar sialoliths are still one of the most technically challenging issues in sialoendoscopic surgery.

- Stones larger than 1 cm and located in the hilum are
  - always attached to the ductal wall.
  - The intraductal approaches, including wire basket and forceps,
  - incapable of releasing such large stones.
  - nearly impossible to pass through the relatively narrow duct channel.
- Therefore, we used the surgical technique of sialoendoscopically assisted open sialolithectomy to remove large submandibular hilar sialoliths in the present study.
- Compared with traditional transoral open sialolithectomy, this endoscopically assisted technique has some advantages.
  - duct exploration,
  - exact orientation of the sialoliths
  - differentiation of the main duct and the lingual nerve
  - management of other pathologic features, such as remnant calculi and mucous plugs.
- Identifying and protecting the lingual nerve is one of the most important issues in this procedure.
- The present study had some limitations.
  - the size of our patient population was limited.
  - the glandular functional recovery of each patient after surgery needs to be evaluated.
- For 17 patients who underwent this surgery successfully, all were symptom free during the follow-up period, but little or no saliva was found from the duct orifice in 6 patients.
- Conclusion
  - sialoendoscopically assisted open sialolithectomy is an effective and safe surgical technique for the removal of large submandibular hilar calculi.
  - The initial clinical outcomes were satisfactory, but the long-term results and the functional recovery of glands are yet to be investigated.

題號	題目
1	下列何者為純漿液性(purely serous)唾液腺？ (A) Submandibular gland (B) Thyroid gland (C) Parotid gland (D) Sublingual gland
答案(C)	出處：Ten Gate's Oral Histology 6 <sup>th</sup> edition p.324
題號	題目
2	Where is sialolithiasis most likely develop？ (A) Submandibular gland (B) Thyroid gland (C) Parotid gland (D) Sublingual gland
答案(A)	出處：Oral and maxillofacial pathology 2 <sup>nd</sup> edition p.393