

# Parotid abscess in Singapore

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## ABSTRACT

**Introduction:** In most parts of the world, acute parotid abscess is a rare pathology. It occurs mainly in elderly debilitated patients and patients with oral sepsis. In Singapore, this lesion appears to be more common.

**Methods:** We retrospectively reviewed all patients admitted to our hospital over a three-year period with parotid abscess.

**Results:** Ten patients were treated for parotid abscess. Only two of these patients were elderly and debilitated. The remaining patients were atypical in that they were relatively young and fit with no history of oral sepsis. All the abscesses responded to simple drainage and antibiotic therapy without the need to resort to the radical drainage techniques reported historically.

**Conclusion:** Parotid abscess is seen in an unusually young cohort of patients in Singapore. The cause for this is unclear but it may be a result of chronic oral dehydration as a consequence of our climate.

**Keywords:** parotid abscess, parotitis, salivary gland, suppurative parotitis

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## INTRODUCTION

Acute suppurative parotitis and parotid abscesses are rare pathologies around the world. They are traditionally reported as complications of long-term debility and oral sepsis<sup>(1)</sup>. Obstructing stone disease is uncommon in the parotid gland. Radical forms of treatment have been advocated for parotid abscess. These include the raising of a full posterior-based flap as for parotidectomy and multiple drainage incisions into the parotid substance in lines parallel to the branches of the facial nerve in order to reduce the risk of iatrogenic nerve damage<sup>(2)</sup>. It was our impression that parotid abscess is more common in Singapore and is often seen in relatively young, fit patients. Despite severe parotid disease, these patients seem to respond

to less radical drainage procedures and antibiotic therapy. We have reviewed our hospital's experience of this lesion over the past three years.

## METHODS

Our hospital computerised records system was used to locate the medical records of all patients admitted during the period from January 1, 2002 to December 31, 2004 with a final diagnosis of parotitis or parotid abscess. The records were carefully scrutinised to ensure that only patients with suppuration of the parotid gland were included in the analysis. Macroscopic pus obtained on needle aspiration or on open drainage was required for inclusion, as well as clear evidence on imaging and at surgery of pus emerging through the parotid fascia from an abscess cavity within the parotid substance. Patient details (including age, sex, race, site of disease, mode of presentation, diabetic status, imaging, drainage methods, bacteriology results, antibiotics used and outcome) were recorded. Where possible, patients were contacted for consent to inclusion in the study and to ensure that they had not had a recurrence of parotid sepsis since they last visited the hospital. Permission for the study was obtained through the hospital ethical committee.

## RESULTS

Ten patients were admitted with parotid abscess. All these patients had macroscopic pus arising from within the parotid gland. They underwent drainage procedures. During the same period, five other patients were admitted with probable bacterial parotitis but none of these patients developed macroscopic pus collections. They all settled on antibiotic therapy alone. They were excluded from the study, as a diagnosis of suppurative parotitis was not confirmed.

The demographical details of our ten patients are given in Table I. Mean duration of symptoms prior to admission was 10.2 days (range 3 to 28 days). All patients had been taking oral antibiotics prior to admission. Patients one and two were elderly

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**Table I. Patient details.**

No.	Age	Sex	Race	Side	Diabetes	Comments
1	84	F	Malay	Left	Type 2	Bedridden, dementia, cardiac failure, asthma, cirrhosis
2	73	F	Indian	Left	No	Bedridden, stroke, cardiac failure, gastrostomy feeding
3	25	F	Filipino	Right	No	
4	66	F	Chinese	Left	No	
5	25	M	Chinese	Left	Type 1	
6	60	F	Chinese	Right	Type 2	
7	30	M	Chinese	Left	No	
8	44	F	Chinese	Left	No	Deep abscess. Aspirated.
9	30	M	Malay	Left	No	
10	20	F	Thai	Bilateral	No	Pus only on right side.

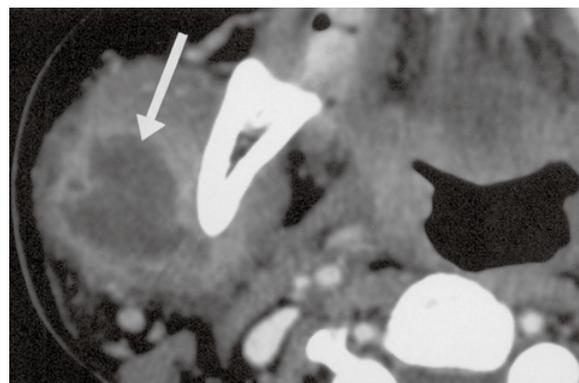
and bedridden with multiple co-morbidity. They represent the “classical” presentation of parotid abscess. The remaining eight patients were relatively young and fit (median age 30 years, range 20-66 years). They gave no history of recent oral pathology and presented with spontaneous onset of painful parotid gland enlargement with fever and cellulitis, leading to a fluctuant collection of pus pointing through the parotid fascia to the subcutaneous tissues of the face (Fig. 1). The abscesses were unilateral in seven of these “atypical” patients. The eighth patient had inflammation of both glands but only had macroscopic pus collection requiring drainage on one side.

No patients had a history of recent mumps contact and mumps IgG levels were not raised in any patient. Patients with a history of mumps vaccination or mumps in childhood had raised IgM levels. Three patients were diabetic - one was on insulin and two were on oral hypoglycaemic agents.

All patients had computed tomography (CT) of the parotid gland except for one patient who presented with an abscess that had burst spontaneously. The continuity of this patient’s abscess through the parotid fascia into the parotid substance was confirmed at surgical exploration. CT showed ringed macroscopic pus collections within the substance of the parotid gland, with pus extending through the parotid fascia to point into the overlying subcutaneous tissues (Fig. 2). None of the patients had evidence of duct stones or duct dilatation on CT or radiographs, and there was no pus coming from the opening of the parotid duct in the mouth on clinical examination. In nine patients, the abscess was limited to the superficial parotid lobe but in one patient, the pus was located principally in the deep part of the gland.



**Fig. 1** Photograph of a patient with parotid abscess prior to treatment.



**Fig. 2** Enhanced axial CT image shows an abscess (arrow) within the parotid gland.

Diagnostic fine needle aspiration was performed in five patients to confirm pus preoperatively (two) or to help locate pus during surgical drainage (three). Drainage of the pus was performed under general anaesthesia in nine patients. Small incisions (1-2cm in length) were made over the fluctuant area. If possible, the incision was kept vertical in the preauricular line for cosmetic reasons. Superficial pus was drained and the parotid gland gently explored through the parotid fascia using a blunt instrument or a fingertip to break down loculi of pus and improve drainage. The pus was sent for routine aerobic and anaerobic culture. The cavity was packed with gauze (five) or a small drain was inserted (four). Only one patient did not undergo surgical drainage. This patient has a small abscess (1 x 2cm) in the deep part of the gland. The abscess responded to CT-guided needle aspiration and antibiotic therapy.

Only five bacteriology cultures of pus were positive (50%). A range of organisms was grown (*Staphylococcus aureus* (two), *Klebsiella pneumoniae*, *Escherichia coli* and *Alpha-haemolytic streptococci*). Following surgical drainage all patients were given intravenous antibiotics for several days and subsequent oral antibiotics. The intravenous antibiotics used most often were Augmentin and Rocephin.

Hospital stay averaged 6 days (range 2-22 days). The residual parotid swellings settled within one to three weeks of surgical drainage in all patients except one. This patient returned to the outpatient clinic two weeks after discharge from hospital with a further small subcutaneous collection of pus. This was tracked posteriorly and was drained under local anaesthesia. This patient's parotid sepsis took a total of six weeks to subside. No patient has had a recurrence of parotid sepsis. Two patients underwent parotid sialography after recovery and these sialograms were normal with no evidence of parotid stone or other duct disease. No patients had facial nerve palsy or parotid salivary fistula.

## DISCUSSION

Parotid abscess is a rare pathology and little has been written about it in recent years. Early suppurative parotitis is probably aborted by antibiotic therapy in some patients, but once an abscess has formed drainage is indicated. If left untreated, it is a potentially life-threatening infection as it can result in septicaemia and deep neck-space infections. "Classical" parotid abscess, as seen in two of our patients, is encountered in elderly bedridden

patients with poor oral hygiene. It is probably associated with chronic reduction of salivary flow and overgrowth of oral bacterial flora. It may also occur in patients with a septic focus in the oral cavity, such as dental infection or chronic tonsillitis.

Our remaining eight patients represent "atypical" presentations. It is interesting to speculate why spontaneous parotid abscess is seen in younger fitter patients in Singapore. None of our patients gave a history of dental or other oral pathology. They do not appear to have had ductal stones or other ductal pathology. None of our patients developed a parotid fistula after drainage. This supports a non-obstructive aetiology. The abscesses appear to arise spontaneously following suppuration in the parotid parenchyma. Initial viral parotitis leading on to suppuration is unlikely as the infections were unilateral in all but one patient and no patients showed mumps IgG. Diabetes mellitus may have predisposed two of our eight atypical patients to suppurative parotitis. It is possible that the younger fitter patients seen in Singapore with parotid abscess have chronic relative dryness of the mouth due to our climate. Mild dehydration may lead to reduced salivary flow predisposing to bacterial infection within the gland. This theory is supported by a higher incidence of parotid abscess reported in some other tropical countries<sup>(3)</sup>.

*Staphylococcus aureus* is the commonest pathogen reported in parotid abscess, and was responsible for 40% of our positive cultures. Streptococci and gram-negative bacilli have also been encountered<sup>(1-4)</sup>. The low rate of positive culture in our patients (50%) is probably explained by preadmission antibiotic therapy. All our patients were on antibiotics for days or weeks prior to admission to hospital. The use of broad-spectrum antibiotics on our patients can be justified by the finding of gram-negative bacilli on some of the cultures and the good outcome of treatment in the group as a whole. None of our patients grew *Burkholderia pseudomallei*. Although this infection is endemic in some parts of South-east Asia and is associated with parotid abscess<sup>(6)</sup>, it was not encountered in our patients. Anaerobic organisms were not grown but have been reported in parotid abscess<sup>(5,7)</sup>.

Classical descriptions of the treatment of parotid abscess advocate the raising of a full flap of skin as for parotidectomy. The gland is widely exposed and multiple incisions are made into the parotid fascia and underlying parotid gland, parallel to the branches of the facial nerve<sup>(2)</sup>. This radical surgery is likely to result in poor wound healing and

cosmetically unsightly scars. It may have been necessary when patients presented with advanced pathology and before the advent of good imaging techniques and effective antibiotics. With modern imaging and antibiotics, it is apparent that the infection can be effectively located and drained through small cosmetic incisions.

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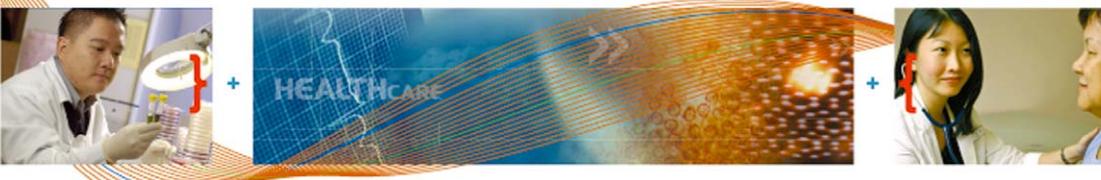
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