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Pleomorphic adenomas: Post-operative radiotherapy is unnecessary following primary incomplete excision: A retrospective review

B.F. Robertson [a,*], G.A. Robertson [a], T. Shoaib [a], D.S. Soutar [a], S. Morley [a], A.G. Robertson [b]

[a] *Canniesburn Plastic Surgery Unit, Glasgow G4 0SF, United Kingdom*
[b] *Beatson Oncology Centre, Glasgow, G12 0YN, United Kingdom*

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Summary *Background:* Current standard treatment of Pleomorphic Salivary Adenoma (PSA) of the Parotid Gland is by surgical excision. The management of incomplete excision remains undecided with post-operative radiotherapy advocated by some and observation by others.
Methods: 190 patients who underwent resection of PSA of the parotid gland within the West of Scotland region from 1981 to 2008 were identified and data collected.
Results: 78/190 patients had a primary incomplete excision. 25/78 received post-operative radiotherapy and 53 were observed. Recurrences occurred in 11/53 in those observed and in 1/25 of those who received radiotherapy. 21/25 complained of significant side effects from the radiotherapy. 38 surgeons performed 190 procedures, with a range of experience from 1 to28 procedures.
Conclusions: Radiotherapy does appear to reduce recurrence with incomplete excision, however it is associated with significant side effects. We therefore feel radiotherapy should not be routinely recommended. Subspecialisation should be adopted to increase the operating surgeon's experience.

* Corresponding author. 31 Beverley Rd, Glasgow G43 2RW, United Kingdom. Tel.: +44 07868848104.
E-mail address: br86@hotmail.co.uk (B.F. Robertson).

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Introduction

Pleomorphic Adenoma is the most common (accounting for around 80%) benign neoplasm of the salivary glands.[1,2] The majority of these lesions are found within the Parotid Gland. In this series 44% of patients were aged 30 – 60 years (Table 1), the disease being more common in younger patients.[21] There is a higher prevelance in females than in males (1.4:1). First line treatment for this tumour is surgical excision, either partial or total parotidectomy combined with preservation of the facial nerve. Simple enucleation of the tumour is no longer considered adequate therapy, as it is associated with a higher prevelance of disease recurrence.[3–6,11,20] Given the proximity of the Facial Nerve to the parotid gland, primary resection of a Pleomorphic Adenoma often causes minor trauma to the facial nerve resulting in short term transient impairment of facial nerve function post operatively,[15] very rarely there is permanent damage.[24,25] Repeat surgery for recurrence in the same area often produces permanent Facial nerve deficits.[7,22]

Factors associated with recurrence include positive margins in the resection specimen, ruptured tumour capsule at time of surgery with 'spillage' of cells into neighbouring tissue,[8,9,16] multi-centricity and metachronous tumour development.[7] When such factors are present the surgeon adopts one of two courses of action. Some surgeons prefer to observe patients with no further intervention, believing this to be adequate therapy. Others refer such patients for post-operative radiotherapy as the residual disease is known to be sensitive to XRT.[17,19] Post-operative radiotherapy has been shown to prevent recurrence in about 95% of cases.[7,12]

Radiotherapy, however, is not without side effects: skin discoloration, skin atrophy, dry mouth and in a small number of cases the induction of skin and soft tissue cancers.[17,18,14] Thus if post-operative therapy does not provide a definite advantage it should be avoided.

The aim of this study was to review management of the Parotid Pleomorphic Adenomas within the West of Scotland, identifying patients at risk of recurrence, where there had been incomplete excision. Having identified the cohort at risk the differences between the subgroup treated simply by surgery (incomplete excision) and that treated by surgery (incomplete excision) plus post-operative radiotherapy were compared to determine the value of post-operative radiotherapy.

Table 1 Age distribution.

Age	Complete excision	Incomplete excision & observation	Incomplete excision & XRT
0–19	0	0	0
20–24	1	0	1
25–29	1	1	0
30–34	6	3	0
35–39	7	3	2
40–44	11	4	5
45–49	12	6	3
50–54	12	6	5
55–59	9	5	1
60–64	10	5	3
65–69	10	3	2
70–74	11	2	0
75–79	8	4	0
80–89	10	9	2
90–99	3	2	1
100+	1	0	0
Total	112	53	25

Materials and methods

Through a review of the Electronic Data System of the Pathology Department at Glasgow Royal Infirmary (BR,GR), all patients who underwent primary excision of pleomorphic adenoma of the parotid gland within the West of Scotland region between 1981 and 2008 were identified.

This Data System contained information on pathology of tumour, site of excision, status of margins on the resected specimen, patient date of birth, patient gender, hospital at which the surgery was performed and the surgeon performing the operation.

Following identification of this cohort, a retrospective review of patients' case notes from the relevant surgical hospitals as well as the notes from the main oncological centre within the West of Scotland was carried out (BR,GR). This delineated further management, follow-up and tumour recurrence in these patients.

For analysis purposes, the patients were divided into three groups:

1. Those receiving Primary surgery with complete excision with no further intervention.
2. Those receiving Primary surgery with incomplete excision followed by observation
3. Those receiving Primary surgery with incomplete excision followed by post-radiotherapy

All patients were treated initially by surgery. The patients were operated on by one of thirty eight surgeons from four specialities (Plastics, Maxillofacial, ENT and General) who carried out between one and twenty seven parotidectomies.

Incomplete excision was considered to have occurred if the pathologist reported that there were either microscopically positive margins in the resection specimen or if the surgeon reported that the tumour capsule had been ruptured during surgery.

The surgeons involved in treating this group of patients had one of two philosophies. One group referred patients for post-operative radiotherapy if the adenoma was adherent to the facial nerve, if the excision margin was involved, or if there was capsular rupture. The other group did not refer for radiotherapy.

The case notes were reviewed to determine if the different approach to management resulted in a difference in outcome for the two groups of patients. As the patients had a benign condition follow up has been difficult, though as the West of Scotland has a single Oncology centre and