

Original Research Article

Superficial parotidectomy: three-year experience using modified Blair's incision

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ABSTRACT

Background: This study presents a series of parotidectomy for superficial benign parotid tumors.

Methods: 18 patients had freely mobile superficial benign parotid lesions of grade zero on House-Brackmann facial nerve grading system underwent parotidectomy through modified Blair incision, with meticulous dissection of the main trunk and branches of facial and the greater auricular nerves with parotid duct sparing. Postoperative (PO) facial nerve functions were assessed and graded after patient was fully conscious, on the 5th PO day, and 6th PO month. Collected data included operative time, intraoperative blood loss, duration of hospital stay, wound drainage and PO complications.

Results: Mean operative time was 115 (± 20.4) minutes and mean intraoperative blood loss was 250 (± 60). PO analgesia was provided as non-steroidal anti-inflammatory drugs injection on patient's request. Mean duration of PO hospital stay was 8 (± 1.9) hours and of wound drainage was 3 (± 0.7) days. No wound infection nor seroma had developed and stitches were allowed for spontaneous removal. Immediate postoperatively 4 patients (22.2%) had incomplete facial nerve weakness; 3 of grade II and one of grade III, at the 5th day PO, two patients still had grade II nerve affection and at the 6th PO month, one patient (5.5%) still had grade II nerve affection.

Conclusions: superficial parotidectomy through modified Blair's incision is feasible, safe and allows nerve, vessels and duct sparing even for cases with recurrent swelling. Incomplete facial weakness was encountered in only one patient at the 6th month PO, but was of grade II.

Keywords: Parotidectomy, Superficial lesions, Blair's incision, Facial nerve function, House-Brackmann facial nerve grading system

INTRODUCTION

Parotid gland disorders are a heterogeneous group including congenital, inflammatory and neoplastic diseases that may show a focal or diffuse pattern of appearance.¹ Pleomorphic adenoma is the most prevalent benign parotid tumor, but it shows potential malignancy and carcinoma ex pleomorphic adenoma can occur in 3-15% of pleomorphic parotid adenoma cases.²

Parotidectomy for benign parotid gland tumor entails complete resection of lesion with preservation of the

facial nerve function.³ Multiple surgical options exist for benign parotid tumors without agreement upon a single, best approach.⁴ Partial superficial parotidectomy is a popular procedure among surgeons for management of benign parotid masses for being quick and less extensive procedure.⁵

The most commonly used incisions for parotidectomy are the Blair incision and the modified face lift incision.³ There is increasing evidences for the use of extracapsular dissection as judged by the minimum fascia-tumor

distance for removal of superficial lobe benign parotid tumors.⁶

Objectives

The current prospective study aimed to present a series of parotidectomy for cases of benign superficial parotid tumors.

METHODS

This study was conducted since November 2018 till June 2020 at General Surgery Department, Mansura Military hospital in conjunction with multiple private centers. The study protocol was approved by the Local Ethical Committee. All patients presenting with painless, slow-growing mass in the parotid region were vulnerable to evaluation. Patients with freely mobile parotid lesions were subjected to ultrasonographic examination to define superficial lesions and if suspicious fine needle aspiration cytology was performed to assure benignity. The study included only patients with superficial parotid lesions assured to be benign, of grade zero on House-Brackmann facial nerve grading system, accepted to sign the written fully informed consent and were free of exclusion criteria.⁷ Exclusion criteria deep parotid masses, masses had suspicious or assured malignancy, facial nerve grade >0, recurrent superficial parotid lesion with facial nerve grade >0, Frey's syndrome or facial synkinesis, synchronous lesions of other salivary glands, history of neurologic or psychiatric disorders, coagulopathy, allergy to used anesthetics and uncontrolled chronic medical disorders especially diabetes mellitus.

Sample size calculation

The prevalence of parotid tumor is low and variable and this limited case collection as evidenced by the previous studies where Lee et al⁸ presented a series of 22 patients as a 10-years' experience and Ramdass et al who presented a series of 60 patients as an 8-year experience, so sample size calculation showed that 15 cases are valuable for getting a conclusive outcome.⁹

Surgical procedure

All surgeries were performed under general anesthesia with endotracheal intubation. After skin sterilization head was turned so as the affected gland is exposed and sterile wraps were used to surround the head and face exposing the area of concern including the ear. Parotidectomy was performed through a modified Blair's incision, which runs in front of the ear tragus and down onto the neck. A skin flap was elevated out over the parotid, dissection was carried down to identify the main trunk of the facial nerve and continued to identify its main branches during mass dissection. Once the superficial part of the gland including the tumor was removed, bed hemostasis was carried on cautiously to guard facial nerve branches, greater auricular nerve was spared and parotid duct was

assured to be continent. Wound bed was drained by suction drain and wound was closed in layers to assure complete coverage of the bed and lastly skin incision was closed with intradermal continuous stitches using absorbable suture material (0/5 vicryl) and sterile dressings were applied. Operative data included operative time, and intraoperative blood loss and complications were recorded.

Postoperative care

Patients were transferred to post-anesthetic care unit till they were fully conscious and then were transferred to ward. After being fully conscious, facial nerve functions were evaluated according to the evaluation protocol shown in Appendix I and the extent of affection was graded according to House-Brackmann facial nerve grading system as shown in Appendix II. Evaluation of facial nerve status was performed after patient was fully conscious. Postoperative (PO) collected data included duration of hospital stay, wound drainage and PO complications. After home discharge, all patients were asked to attend the outpatient clinic on the 3rd, 5th and 7th PO for deciding when to remove the drainage tube and to assess facial nerve function on the 5th PO day. After drain removal and wound inspection patients were asked to attend the outpatient clinic at the 6th PO month for re-evaluation of facial nerve function.

Data presentation

Data are presented as mean and standard deviation, numbers and percentages.

RESULTS

Twenty-two patients were vulnerable to evaluation; 4 cases were excluded, 3 had inflammatory lesions and the fourth was suspicious of malignancy. Fifteen males and three females of mean age of 44 (± 11.7) were enrolled in the study. Two patients had recurrent parotid swelling and 16 had fresh swellings, but all patients had House-Brackmann grade 0 (Table 1).

All surgeries were conducted uneventfully within a mean operative time of 115 (± 20.4); range: 90-155 minutes. Mean intraoperative blood loss was 250 (± 60); range: 100-300 ml and no patient required blood transfusion. PO analgesia was provided as injection of non-steroid anti-inflammatory drugs in the form of ketorolac tromethamine (Ketolac 30 mg/2ml) given slowly intravenously diluted in 10 ml of normal saline (6 mg/ml); 5 ml were given on patient's request for moderate pain sensation and repeated if necessary; no patient required PO opiates. All patients were discharged home after being nor in pain or sedated and assuring of presence of no wound leakage. Mean duration of PO hospital stay was 8 (± 1.9) hours; range 5-12 hours.

Table 1: Demographic and clinical data of studied patients.

Data		Findings (%)
Age (years)	<25	1 (5.6)
	25-30	2 (11.1)
	31-40	4 (22.1)
	41-50	5 (27.8)
	51-60	5 (27.8)
	>60	1 (5.6)
	Total	44±11.7
Weight (kg)		86.9±8.6
Sex	Male	15 (83.3)
	Female	3 (16.7)
ASA grade	I	14 (77.7)
	II	3 (16.7)
	III	1 (5.6)
Clinical local data	Recurrent lesion	2 (11.1)
	De novo lesion	16 (88.9)
	House-Brackmann grade 0	18 (100)

Data are presented as mean, standard deviation, numbers and percentages; ASA: American Society of Anesthesiologists.

Table 2: Operative and PO data of studied patients.

Data	Findings (%)	
Operative time (min)	90-<120	9 (50)
	120-150	8 (44.4)
	>150	1 (5.6)
	Mean (±SD)	115 (±20.4)
	Range	90-155
Intraoperative blood loss (ml)	<200	7 (38.9)
	>200	11 (61.1)
	Mean (±SD)	250 (±59.8)
	Range	100-300
PO hospital stay (hr.)	≤6	6 (33.3)
	>6	12 (66.7)
	Mean (±SD)	8 (±1.9)
	Range	5-12
Duration of wound drainage (days)	Two	4 (22.2)
	Three	10 (55.6)
	Four	4 (22.2)
	Mean (±SD)	3 (±0.7)
	Range	2-4

Data are presented as mean, standard deviation, numbers and percentages; PO: Postoperative.

Duration of wound drainage had ranged between two and four days with a mean duration of 3±0.7 days. At follow-up no wound infection nor seroma had developed and stitches were allowed for spontaneous resolution (Table 2).

Table 3: House-Brackman grade of PO facial nerve function.

	House-Brackmann grade	Immediate PO	5-days	6-m
Incomplete facial nerve weakness	I	14 77.8%	16 88.9%	17 94.5%
	II	3 16.7%	2 11.1%	1 5.5%
	III	1 5.5%	0	0
	IV	0	0	0
Complete facial nerve weakness	V	0	0	
	VI	0	0	0

Data are presented as numbers and percentages.

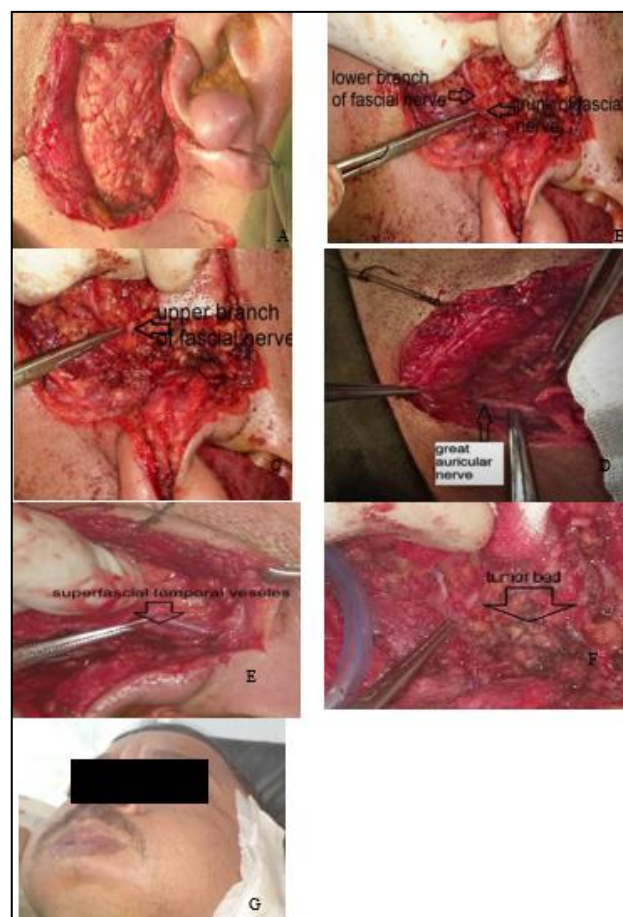


Figure 1: Case (1): (A) Parotid mass was fully dissected; (B) dissection and exposure of trunk & lower branch of facial nerve; (C) upper branch of facial nerve; (D) greater auricular nerve and (E) superficial temporal vessels are intact. (F) Tumor bed was dry and suction drain was inserted. (G) PO evaluation of facial nerve motor functions indicated House-Brackmann grade 0.



Figure 2: Case (1): (A) Preoperative picture of mass of parotid gland; (B) Parotid mass is fully dissected; (C and D) Facial nerve was exposed; (E and F) PO evaluation of facial nerve motor functions immediate and 5-days PO indicated House-Beckmann grade 0.



Figure 3: Case (3): (A) Preoperative picture of recurrent mass of parotid gland [arrows point to old incision]; (B) tragus of ear [arrow] was exposed and mass appeared as multinodular secondary to presence of multiple adhesions; (C) parotid mass is fully dissected from superficial adhesions and was prepared for removal; (D) tumor bed was dry and facial nerve [arrow] was exposed to assure it is intact.

Fortunately, no patient developed complete facial nerve weakness. Immediate PO evaluation defined 4 patients (22.2%) had incomplete facial nerve weakness; 3 of grade II and only one of grade III.

At the 5th day PO, two patients showed complete resolution of facial nerve affection and became of grade I, but the other two patients still had grade II nerve affection. At the 6th PO month, only one patient (5.5%) still had grade II nerve affection and was considered as permanent nerve affection (Table 3).

DISCUSSION

The obtained results of this series of patients had superficial parotid lesions including two recurrent swellings after superficial parotidectomy, illustrated the efficacy of the conventional modified Blair's incision that provided sufficient surgical area to make meticulous cautious dissection of nerves and parotid duct as shown in the photos of the presented cases and as supported by PO facial nerve function evaluation.

Concerning the incidence of facial nerve affection, incomplete facial weakness was reported in only two patients (11.1%) at the 5th PO day and one patient still had affection at the 6th month PO, but was of grade II as judged by the House-Brackmann grading system that was previously documented as an efficient tool for evaluation of facial nerve motor function and response to varied lines of treatment of patients with Bell's palsy, facial nerve schwannoma and intracranial lesion.¹⁰⁻¹⁵ The reported number of patients had affected facial nerve function coincided with Cheung et al, who reported 2 transient and one permanent facial nerve affection of grade II among their series of parotidectomy.¹⁶ The reported incidence of facial nerve palsy was superior to that previously reported by Carta et al, who presented a series of 13 patients treated for benign parotid tumors and reported that 11 experienced temporary and 2 experienced permanent facial palsy, both of House-Brackmann grade II.¹⁷ Also, in line with the reported figure for incidence of facial nerve affection Wolber et al, Venkatesh et al and Matsumoto et al reported transient facial palsy total in 14%, 22% and 15.1% of their series, respectively.^{3,18,19}

All surgeries were performed through modified Blair's incision and the aforementioned outcome coincided with that reported by Li et al who reported comparable operation time and incidence of transient facial nerve paralysis between parotidectomy through Blair S-incision or endoscopic-assisted postauricular groove approach with no recurrence of tumors in either group.²⁰ Also, Li et al compared the operative data of partial superficial parotidectomy through V-shaped, hairline N-shaped and Blair incisions and reported significantly shorter operative time and lesser drainage volume after excision of tumors located in the lower part of the parotid gland with Blair incision in comparison to with the V-shaped, but the difference was non-significant versus N-shaped

incision, while for tumors located in the front, upper and middle of parotid gland, there were no statistically significant differences between the three incisions.²¹ Matsumoto et al compared the incidence of facial palsy after parotidectomy using either modified Blair or modified face left incisions and reported that the incidence rate of palsy with Blair incision was non-significantly higher among patients with superior, while was significantly lower among patients with deep lobe tumors.³

Moreover, Khafif et al documented the feasibility of individualized mini-Blair incisions; classic mini-Blair" for tumors located in the body region, the cervical mini-Blair tumors located in the tail of the gland and the vertical mini-Blair for anterior benign as well as selected malignant parotid tumors.²²

Regrading wound closure, it was performed using continuous absorbable intradermal sutures improved wound appearance as a line without interruptions and minimized the skin trauma; these findings supported that previously reported by Jiang et al and Zhang et al who documented the advantageous cosmetic outcome with the use of continuous absorbable intradermal sutures.^{23,24}

Limitations

The use of only modified Blair's incision and the inclusion of only superficial parotid swellings are the study limitations.

CONCLUSION

Superficial parotidectomy through modified Blair's incision is feasible, safe and allows nerve, vessels and duct sparing even for cases with recurrent swelling. Incomplete facial weakness was encountered in only one patient at the 6th month PO, but was of grade II.

Recommendations

Wider scale multicenter studies are advocated for comparisons of the outcome of parotidectomy through varied incisions and to evaluate the outcomes of parotidectomy for deeply sited tumors and malignant lesions.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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