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Short report

Otoplasty; Our Experience with Surgery of the Auricle

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ABSTRACT

Objective: The aim of this study is to high light on otoplasty technique that recreates the normal appearance of the ear with minimal incision, short time, & excellent result. Methods: This is prospective study carried out on 29 patient (10 female, 19 male) with age between 5-7 years (mean age 5 6/12 year) reported as acase of bat ear in otolaryngology clinics at royal medical services hospitals in Jordan over 3-years (2010-2013). Results: Most patients' family appreciate the results of surgery when the bandage is removed & otoplasty cartilage splitting technique improve the appearance of the patient with exellent results & minimal complication. Conclusion: Otoplasty cartilage splitting technique appears to be simple, effective in attempting to recreate the normal, natural & anatomical appearance of the ear.

1. Introduction

Auricle is developed inutero from week 6- week 16 from first & second branchial arch, it is shaped at birth & it is nearly adult size by age 5-6 years.

Pinna is composed of thin plate of fibro elastic cartilage covered with skin except at the lobule, skin of pinna is thin & closely adherent to perichondrium on the lateral surface, number of muscle is inserted upon cartilage &most of them are rudimentary, blood supply is derived via posterior auricular & super facial temporal arteries, where sensory innervations is derived via V3, C3, X, VII, Lymphatic drainage into pre auricular, occipital, &high jugular lymph nodes.

Protruding ears are genetically transmitted as autosomal dominant with variable peneterance, generally they have normal hearing & other congenital anomalies may be present.

Otoplasty is indicated for recreation the normal appearance for those protrude > 20 mm & angle > 35° from occipital scalp & it is contra indicated in those with un realistic expectation & unable to cooperate with postoperative care.

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Some of the Jordanian family applying tapes in early infancy to influence the growth &shape of the ear.

2. Materials & Methods:

Over period of two years between 2010-2013, prospective study was conducted at two of the royal medical services hospitals on 29 patients, 10 males & 19 females, with mean age 5 6/12 years, those with bat ears underwent otoplasty using cartilage splitting technique, the majority of the patients were below school age, the aim of restoration of anatomical balance is the goal of this technique & the possibility of intra operative & post operative complication were discussed with the families.

Pre operative management include medical history (excessive bleeding, poor wound healing, keloid forming scars), physical examination (asymmetries of the auricle, height should be 5-6 cm, long axis = 20 mm from vertical plane, angle from occipital scalp no greater than 35°, antihelix 75-105 angle between scaphoid fossa & concha), preoperative photography was taken in frontal, lateral & oblique position.

The most common deformity seen was under developed anti helix.

The technique include ellipse-shaped skin incision &excision lateral to the post auricular crease, antihelical fold is manually created, to medialize excessive projection of concha, medial surface

is shaved & 3- sutures are passed from conchal cartilage then directed posteriorly, then create appropriate anti helix, the sutured is tightened to desired effect, after the desired changes have been made to cartilaginous contour, skin closed using 6-0 prolene, mastoid type compressive dressing is placed (Fig 1,2) , first day postoperative dressing are removed, inspect for any sign of hematoma, redressing, the same on the second day , sutures are removed on day seventh .

Normal Ranges of mini VIDAS Parameters

Sl No	Ref. Code	Items	Normal Ranges
1	30210	Toxo Ig G	**Titer (IU/ml) Interpretation** < 4 Negative 4 ≤ Titer < 8 Equivocal > 8 Positive
2	30202	Toxo Ig M	**Thresholds interpretation of results** **Index** Interpretation i < 0.55 Negative 0.55 < i < 0.65 Equivocal i > 0.65 Positive
3	30204	CMV Ig G	**Value (aU/ml) Interpretation** < 4 Negative from > 4 to < 6 Equivocal > 6 Positive
4	30205	CMV Ig M	**Value (aU/ml) Interpretation** < 4 Negative from > 4 to < 6 Equivocal > 6 Positive
5	30221	RUB Ig GII	**Titer Interpretation** < 10 IU/ml Negative 10 < Titer < 15 IU/ml Equivocal > 15 IU/ml Positive
6	30214	RUB Ig M	**Index i Interpretation** i < 0.80 Negative 0.80 < i < 1.20 Equivocal i > 1.20 Positive
7	30443	HIV DUO ULTRA	**Test value Interpreted result** < 0.25 (for antigen **and** antibody detection) Negative > 0.25 (for antigen or antibody detection) Positive
8	30447	HIV DUO QUICK	**Test value Interpreted result** < 0.25 (for antigen **and** antibody detection) Negative > 0.25 (for antigen or antibody detection) Positive
9	30315	HBs Ag	**Test value** **Short protocol Long protocol Interpretation** i < 0.13 i < 0.10 Negative i > 0.13 i > 0.10 Positive
10	30314	ANTI-HBC TOTAL	**Index Interpretation** i < 1 Presence of anti-HBc antibodies 1 < i < 1.4 Equivocal result i > 1.4 Absence of anti-HBc antibodies
11	30238	ANTI –HBS TOTAL	**TITER (mIU/ml) INTERPRETATION** < 8 Negative 8 ≤ Titer ≤ 12 Indeterminate result > 12 Positive
11	30312	ANTI_HAV TOTAL	**Concentration Interpretation** < 15 mIU/ml Negative > 15 and < 20 mIU/ml Borderline positive > 20 mIU/ml Positive
12	30307	HAV IgM	**Test Value Interpretation** i < 0.4 Negative i > 0.4 and i < 0.5 Equivocal** i > 0.5 Positive
13	30439	HBC IgM	**Test Value (PEIU/ml) Interpretation** < 5 Negative > 5 and < 10 Equivocal * > 10 Positive

Sl No	Ref. Code	Items	Normal Ranges
14	30305	Hbe/ANTI Hbe	**Index Interpretation HBe Ag** i < 0.1 Negative: absence of HBe Ag i > 0.1 Positive: presence of HBe Ag **Index Interpretation anti-HBe** i < 0.4 Positive: presence of anti-HBe 0.4 < i < 0.5 Equivocal i > 0.5 Negative: absence of anti-HBe
15	30406	LH	**Men:** 1.1 - 7.0 mIU/ml **Women:** - Ovulation peak 9.6 - 80.0 mIU/ml - Follicular phase: First half 1.5 - 8.0 mIU/ml Second half 2.0 - 8.0 mIU/ml - Luteal phase 0.2 - 6.5 mIU/ml Menopause: 8.0 - 33.0 mIU/ml
16	30407	FSH	**Men** : 1.7- 12.0 mIU/ml **Women :** - Ovulation peak 6.3 - 24.0 mIU/ml - Follicular phase: 1st half 3.9 - 12.0 mIU/ml 2nd half 2.9 - 9.0 mIU/ml - Luteal phase 1.5 - 7.0 mIU/ml - Menopause : 17.0 - 95.0 mIU/ml
17	30409	PROGESTERONE	**Men** ≤ 0.25 – 0.56 ng/ml **Women:** . Follicular phase ≤ 0.25 - 0.54 ng/ml . Luteal phase 1.5 - 20 ng/ml . Ovulation ≤ 0.25 - 6.22 ng/ml . Menopause < 0.41 ng/ml
18	30410	PROLACTIN	**Women** 5-35 ng/ml **Men** 3-25 ng/ml
19	30405	HCG	**men:** < 3 mIU/ml **Women** - cyclic women: < 4 mIU/ml - menopausal women: < 13 mIU/ml - pregnant women: Week of amenorrhoea Mean(mIU/ml) Limits (mIU/ml) 4 - 5 7400 1 500 - 23 000 5 - 6 32800 3 400 - 135 300 6 - 7 52 000 10 500 - 161 000 7 - 8 74 000 18 000 - 209 000 8 - 9 100 000 37 500 - 219 000 9 – 10 105 000 42 800 - 218 000 10 - 11 96 000 33 700 - 218 700 11 - 12 75 300 21 800 - 193 200 12 - 13 66 700 20 300 - 166 100 13 - 14 65 900 15 400 - 190 000 2nd trimester (14-26) 26 150 2 800 - 176 100 3rd trimester (26-39) 27 200 2 800 - 144 400
20	30431	ESTRADIOL	**Men** < 62 pg/ml **Women :** - Follicular phase : 18 - 147 pg/ml - Pre-ovulatory peak 93 - 575 pg/ml - Luteal phase 43 - 214 pg/ml Menopause < 58 pg/ml

<table>
<tr><th>Sl No</th><th>Ref. Code</th><th>Items</th><th>Normal Ranges</th></tr>
<tr><td>21</td><td>30418</td><td>TESTOSTERONE</td><td>Cyclic women : 0.1 - 0.9 ng/ml
Men : 3.0 - 10.6 ng/ml</td></tr>
<tr><td>22</td><td>30453</td><td>CEA S</td><td>0-3 ng/ml</td></tr>
<tr><td>23</td><td>30413</td><td>AFP</td><td>0 -2 IU/ml</td></tr>
<tr><td>24</td><td>30428</td><td>TPSA</td><td>PSA concentrations (ng/ml)
Age (years) Low limit [redacted] igh limit
< 40 0.21 1.72
40 - 49 0.27 2.19
50 - 59 0.27 3.42
60 - 69 0.22 6.16
> 69 0.21 6.77</td></tr>
<tr><td>25</td><td>30426</td><td>CA125</td><td>0 - 35 U/ml</td></tr>
<tr><td>26</td><td>30427</td><td>CA 199</td><td>0 - 37 U/ml</td></tr>
<tr><td>27</td><td>30429</td><td>CA 153</td><td>< 30 U/ml</td></tr>
<tr><td>28</td><td>30440</td><td>F PSA</td><td>free PSA/TPSA > 0.18 BPH suspect (monitor closely)
free PSA/TPSA ≤ 0.18 Biopsy required</td></tr>
<tr><td></td><td>30420</td><td>B2 MICROGLOBULIN</td><td>* Sera :
<table><tr><th>Age range</th><th>Mean value (mg/l)</th><th>Highest value (mg/l)</th></tr><tr><td>20 to 39 years</td><td>1.77</td><td>3.47</td></tr><tr><td>40 to 59 years</td><td>1.59</td><td>3.17</td></tr><tr><td>60 to 80 years</td><td>2.28</td><td>3.75</td></tr></table>* Urine :
<table><tr><th>Age range</th><th>Most Frequent value (mg/l)</th><th>Highest value (mg/l)</th></tr><tr><td>20 to 39 years</td><td>0.01</td><td>1.11</td></tr><tr><td>40 to 59 years</td><td>0.05</td><td>1.8</td></tr><tr><td>60 to 80 years</td><td>-</td><td>2.33</td></tr></table></td></tr>
<tr><td>29</td><td>30419</td><td>IgE</td><td>1-6 months <15 KIU/L
6-12 months <20 KIU/L
1-2 years <30 KIU/L
2-4 years <45 KIU/L
4-6 years <60 KIU/L
6-8 years <100 KIU/L
8 years and above <150 KIU/L</td></tr>
<tr><td>30</td><td>30448</td><td>TROPONIN I ULTRA</td><td>< 0.11 ug/L NEGATIVE
> 0.11 ug/L POSITIVE</td></tr>
<tr><td>31</td><td>30446</td><td>MYOGLOBIN</td><td>10 - 46 µg/l.</td></tr>
<tr><td>32</td><td>30421</td><td>CK MB</td><td>0 – 5 ng/ml</td></tr>
<tr><td>33</td><td>30449</td><td>NT PRO BNP</td><td></td></tr>
<tr><td>34</td><td>30603</td><td>DIGOXIN</td><td>Therapeutic range 0.8 – 2.0 ng/ml
Toxic range > 2.5 ng/ml</td></tr>
<tr><td>35</td><td>30442</td><td>D DIMER</td><td>< 500 ng/ml Positive
> 500 ng/ml Negative</td></tr>
<tr><td>36</td><td>30450</td><td>B.R.A.H.M.S PCT</td><td>< 0.05 ng/ml Healthy
0.05 – 0.5 ng/ml Local Infections
0.5 – 2.0 ng/ml Systemic Infection (Sepsis)
2.0 – 10.0 ng/ml Severe Sepsis
> 10 ng/ml Septic Shock</td></tr>
<tr><td>37</td><td>30451</td><td>CORTISOL S</td><td>morning (8-10 a.m.) 54.94 – 287.56 ng/mL.
afternoon (4-7 p.m.) 24.61 – 171.52 ng/mL.</td></tr>
<tr><td>38</td><td>30411</td><td>FERRITIN</td><td>Men: 68 – 434 ng/ml
Normal menstruating women: 9.3 – 159 ng/ml
Menopausal women: 24.4 – 278 ng/ml</td></tr>
<tr><td>39</td><td>30115</td><td>PROTEIN C</td><td>65 - 140 %.</td></tr>
<tr><td>40</td><td>30436</td><td>vWF</td><td>- for O blood group donors, 52 - 154%.
- for non-O blood group donors, 60 - 200%.</td></tr>
</table>

Sl No	Ref. Code	Items	Normal Ranges
41	30192	H. PYLORI IgG	**Test Value Threshold Interpretation** TV < 0.75 Negative 0.75 ≤ TV < 1.00 Equivocal TV ≥ 1.00 Positive
42	30118	C. DIFFICILE TOXIN A & B	**Test Value Result** < 0.13 Negative ≥ 0.13 to < 0.37 Equivocal ≥ 0.37 Positive
43	30219	MEASLES IgG	**Test Value Result** < 0.13 Negative ≥ 0.13 to < 0.37 Equivocal ≥ 0.37 Positive
44	30218	MUMPS IgG	**Test value Interpretation** < 0.35 Negative ≥ 0.35 to < 0.50 Equivocal > 0.50 Positive
45	30192	VARICELLA – ZOSTER IgG	**Test value Interpretation** < 0.35 Negative ≥ 0.35 to < 0.50 Equivocal > 0.50 Positive
46	30101	CHLAMYDIA	**Test value threshold Interpretation** < 60 Negative > 60 to < 80 Equivocal > 80 Positive
47	30235	EBV EBNA IgG	**Test Value (TV) Interpretation** ≤ 0.09 Negative 0.10 ≤ VT ≤ 0.20 Equivocal ≥ 0.21 Positive
48	30236	EBV VCA/EA IgG	**Test Value (TV) Results** ≤ 0.09 Negative 0.10 ≤ VT ≤ 0.20 Equivocal ≥ 0.21 Positive
49	30237	EBV VCA IgM	**Test Value (TV) Results** ≤ 0.11 Negative 0.12 ≤ VT ≤ 0.18 Equivocal ≥ 0.19 Positive
50	30107	ROTA VIRUS	**Test Value Threshold Interpretation** < 95 Negative > 95 to < 300 Equivocal > 300 Positive

Results & discussion:

*Incomplete correction of the prominent ears occurs in 2/29 as follow:

_Telephone ear 1/29 (correction mid portion more than superior & inferior poles).

_ Reverse telephone ear 1/29 (inadequate medialization central portion).

*Over correction occurs in 1/29.

*Hematoma occurs in 0/29.

*Seroma occurs in 0/29.

*Chondritis occurs in 0/29.

*Suture Bridge occurs in 1/29.

*Hyper trophic scar occurs in 1/29.

*Keloid scar occurs in 0/29.

Conclusion:

Otoplasty cartilage splitting technique appears to be simple, effective in attempt to recreate the normal, natural, & anatomical appearance of the ears.

Most patients &families appreciate the results of surgery as soon as the bandage is removed.

References:

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