

三公分的試煉

台中慈濟醫院

聽語暨人工耳蝸中心

吳弘斌醫師



與其他器官不同，人類的耳
蝸在一出生就長好三公分長

緣起



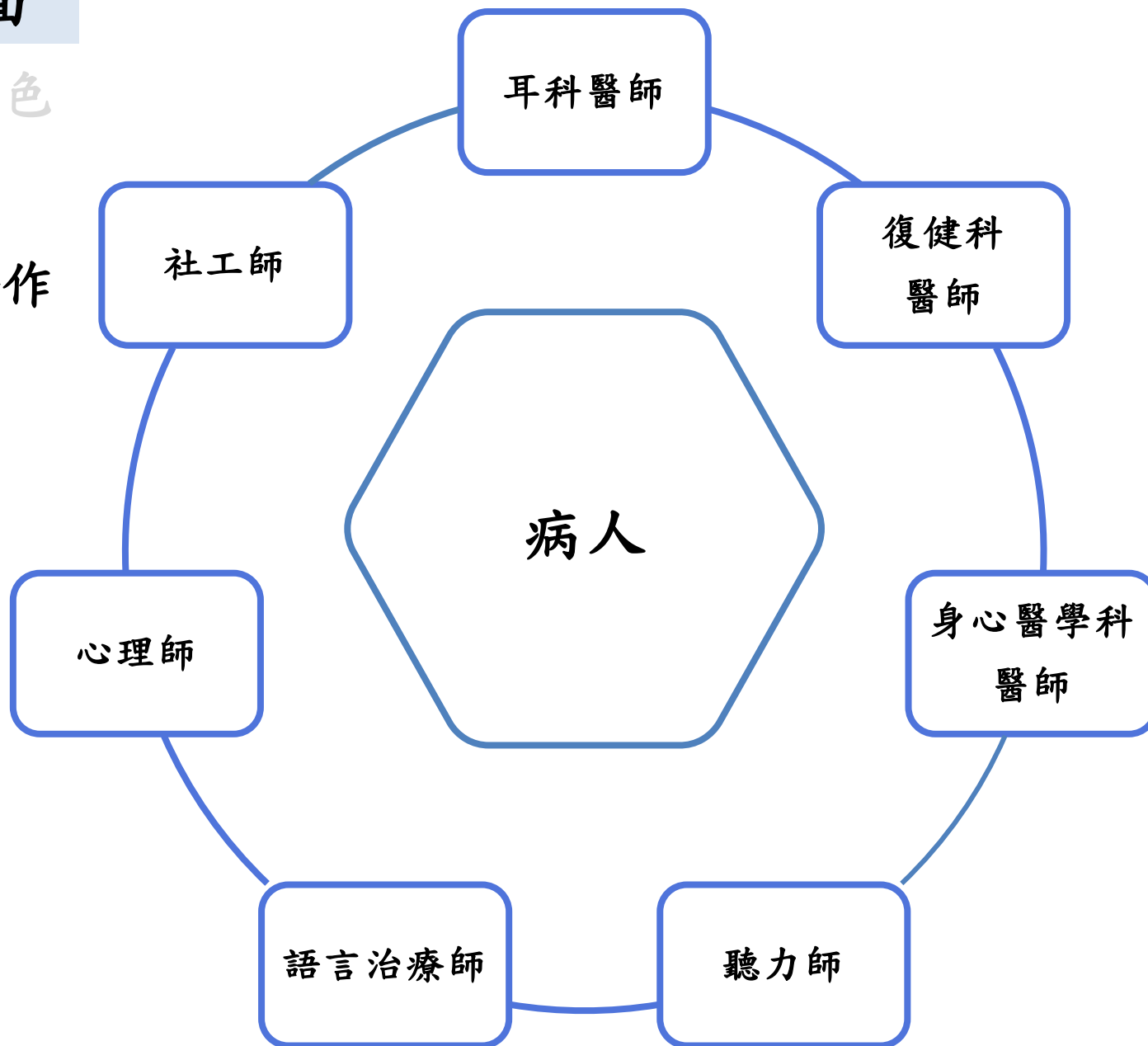
跨團隊合作

- 跨專業交流
- 討論個案的問題和分享經驗
- 量身訂做術後追蹤計畫



過程面

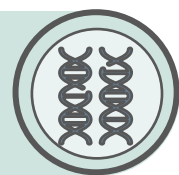
- 創新特色
- 標準化
- 執行率
- 團隊合作





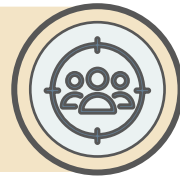
全程標準

基因檢測



實證醫學

量身訂做



標準化術前評估



門診諮商



聽力評估



影像學



社會資源



基因檢測



語言發展



心智衡鑑





標準化手術

微創切口&植入

- 切口僅2.5公分
- 恢復快
- 保留耳蝸組織
- 殘餘聽力





微創植入

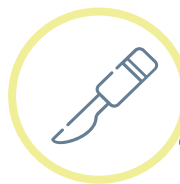
- 保留耳蝸組織構造
- 保存殘存聽力

植入時避免血或骨塵帶入

植入速度要慢

低轉速磨圓窗四周骨頭

一次就要成功



標準化手術中監測

手術成功率 100%

皮瓣感染率 0%

顏面神經損傷率 0%

主要併發症發生率 0%

顏面神經

神經電位

影像檢查

全程錄影



標準化術後流程

一日開機

Received: 18 April 2019 | Revised: 4 August 2019 | Accepted: 30 August 2019
DOI: 10.1111/coa.13427

ORIGINAL ARTICLE

WILEY

Feasibility of early activation after cochlear implantation

Chuan-Hung Sun^{1,2} | Chan-Jung Chang¹ | Chuan-Jen Hsu^{1,2} | Hung-Pin Wu^{1,2}



工學部進修班

病歷號: 使用者:

姓名: 收單日期: [1090822]

生日: 手前日: [1090823]

查無紀錄 - 請重新查詢或使用新增! !

類別: 聽覺 語言評估 吞嚥 聽力

序號	時間	醫師/問題	測驗 & RT	聽覺名單	語言	ESRT & ART	操作聽力
1	1090822	聽覺	1090822	是	是	是	是
2	1090824	聽覺 1次	1090824	是	是	是	是
3	1090830	聽覺 1周	1090830	是	是	是	是
4	1090906	聽覺 3周	1090906	是	是	是	是
5	1090913	聽覺 3周	1090913	是	是	是	是
6	1100523	聽覺 6個月	1100523	是	是	是	是
7	1091023	聽覺 6個月	1091023	是	是	是	是
8	1091123	聽覺 6個月	1091123	是	是	是	是
9	1100223	聽覺 6個月	1100223	是	是	是	是
10	1100523	聽覺 6個月	1100523	是	是	是	是
11	1100523	聽覺 1年	1100523	是	是	是	是
12	1110223	聽覺 1.5年	1110223	是	是	是	是
13	1110023	聽覺 2年	1110023	是	是	是	是
14	1120223	聽覺 2.5年	1120223	是	是	是	是
15	1120023	聽覺 3年	1120023	是	是	是	是

術後追蹤

過程面

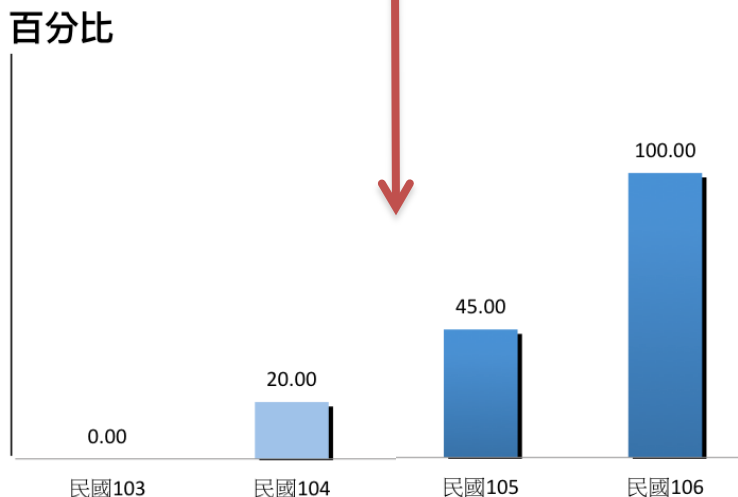
- 創新特色
- 標準化
- 執行率
- 團隊合作

執行率

聽力完治率

接受聽能治療人數/人工耳蝸個案人數

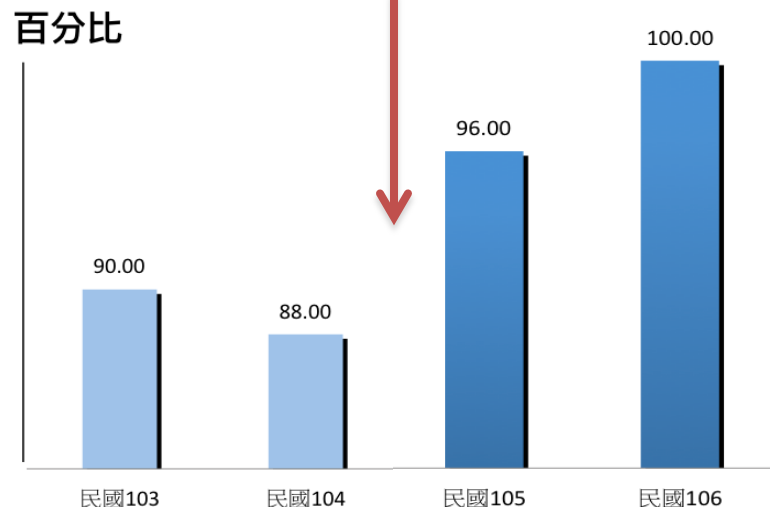
導入標準化流程



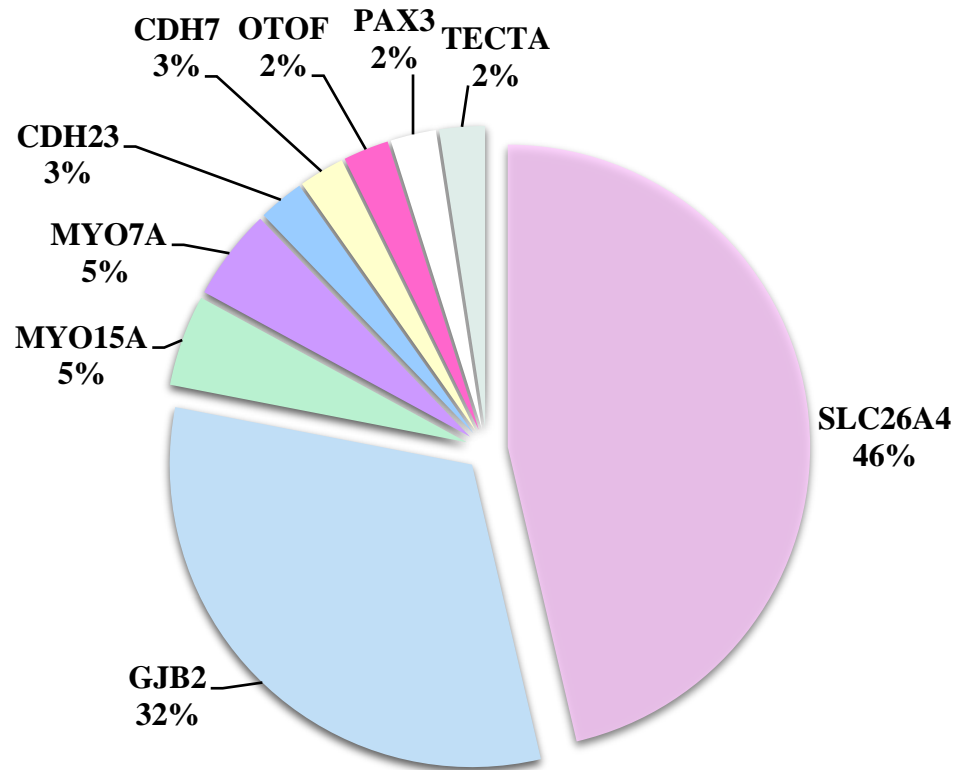
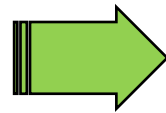
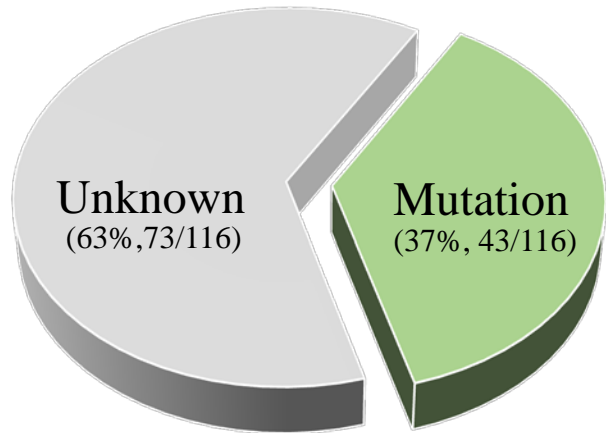
手術完治率

完成開刀人數/合適候選人數

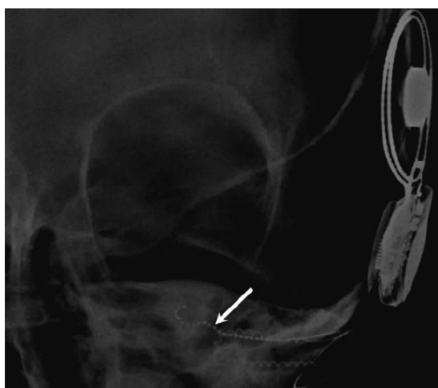
導入標準化流程



台中慈濟醫院 人工耳蝸植入術個案之聽損基因



組織結構異常



- ✓ 利用修飾外耳道閉塞技術成功植入人工耳蝸
- ✓ 聽力改善至25分貝以下



歐洲
(Vincenti, et al.,2018)

傳統手術方法

未有顯著成效

- 三位有聲音察覺
- 兩位使用手語
- 一位使用讀唇

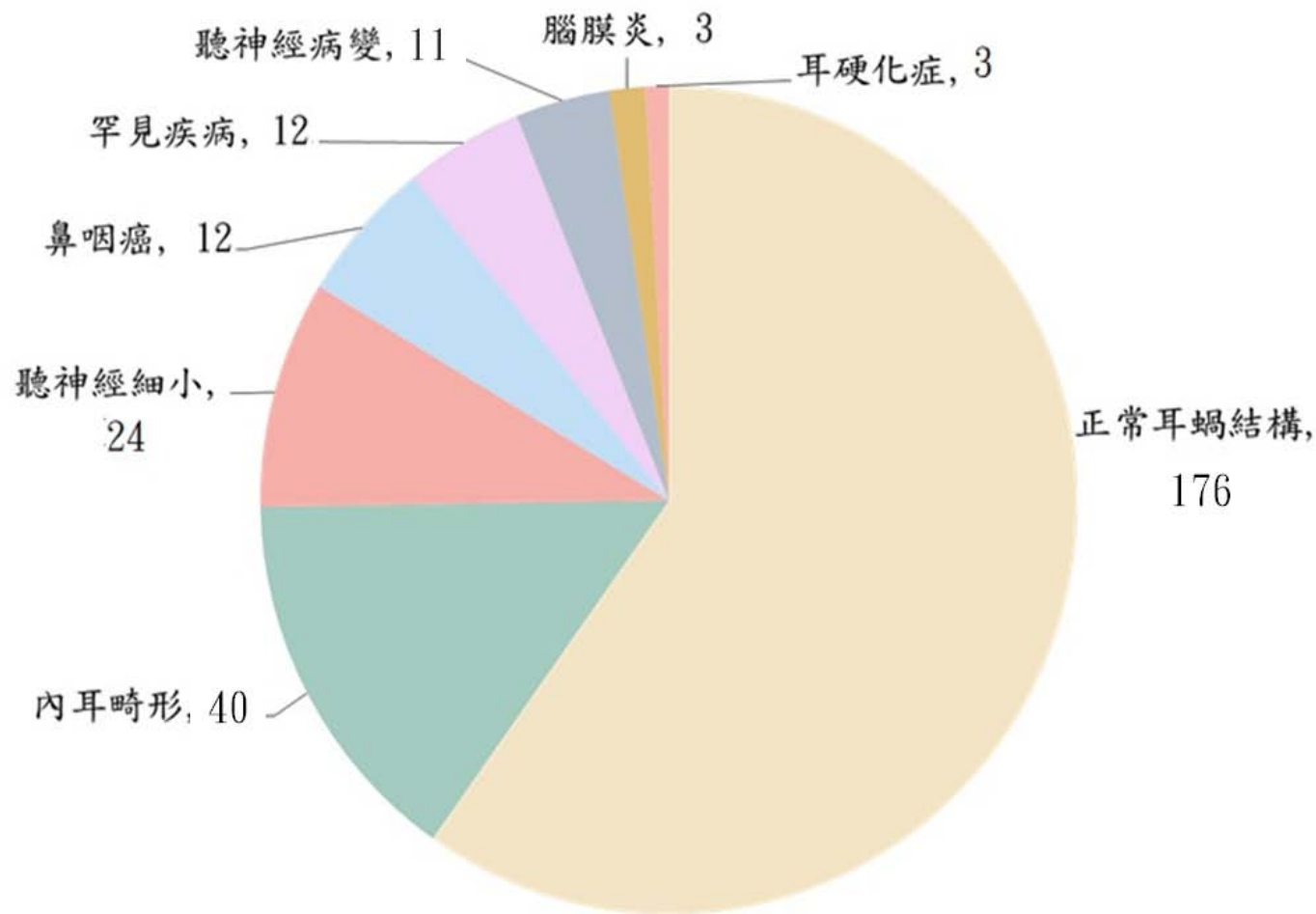
本中心

全新手術方法
Modified transcanal approach

術後成效佳

- 聲場平均 25 dB
- 會透過聽覺線索仿說

個案數 (281耳)





量身訂做



孩童

- 基因檢測
- 量身訂做醫療計畫



成人

- 兩階段式手術
(中耳炎、鼻咽癌)

Management Options for Patients With Nasopharyngeal Carcinoma Undergoing Cochlear Implantation

Chee-Yee Lee, MD^{1,2}, Wei-Chieh Lin, MD¹, Chung-Ching Lin, MD¹, Chuan-Jen Hsu, MD, PhD^{1,2,3}, and Hung-Pin Wu, MD, PhD^{1,2}

MIDDLE EAR AND MASTOID DISEASE

Tympanoplasty With or Without Balloon Eustachian Tuboplasty for Chronic Suppurative Otitis Media With Obstructive Eustachian Tube Dysfunction

Hsieh, Cheng-Yu[†]; Chang, Chan-Jung[†]; Sun, Chuan-Hung[†]; Lee, Chee-Yee[†]; Gotamco, Giselle L.[†]; Hsu, Chuan-Jen[†]; Wu, Hung-Pin[†] [Author Information](#) ©

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Ear, Nose & Throat Journal
1-5
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特殊個案

- 內耳構造異常
- 特殊手術方式

Clinical Case Report

Medicine[®]

OPEN

Modified transcanal cochlear implantation in CHARGE syndrome

A case report

Cheng-Yu Hsieh, MD[†], Chuan-Hung Sun, MD^{†,§}, Wei-Lin Lin, MD[†], Giselle L. Gotamco, MD^{†,§}, Chuan-Jen Hsu, MD, PhD^{†,§}, Hung-Pin Wu, MD, PhD^{†,§}

我們哪裡比別人好

#1

標準流程

#2

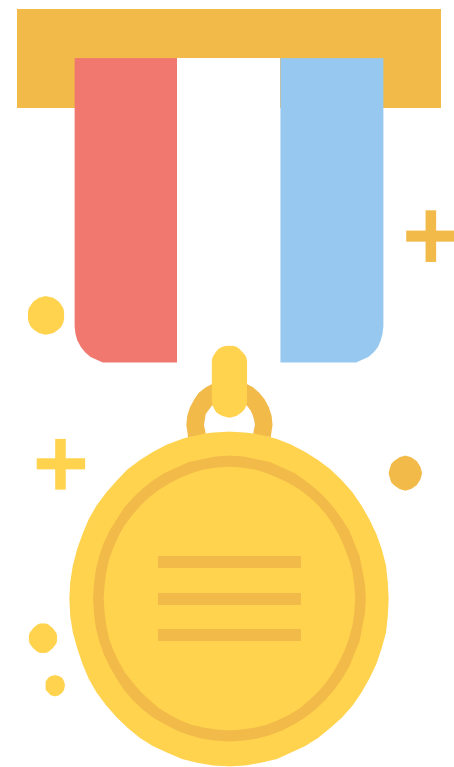
論文數量

#3

殘餘聽力

#4

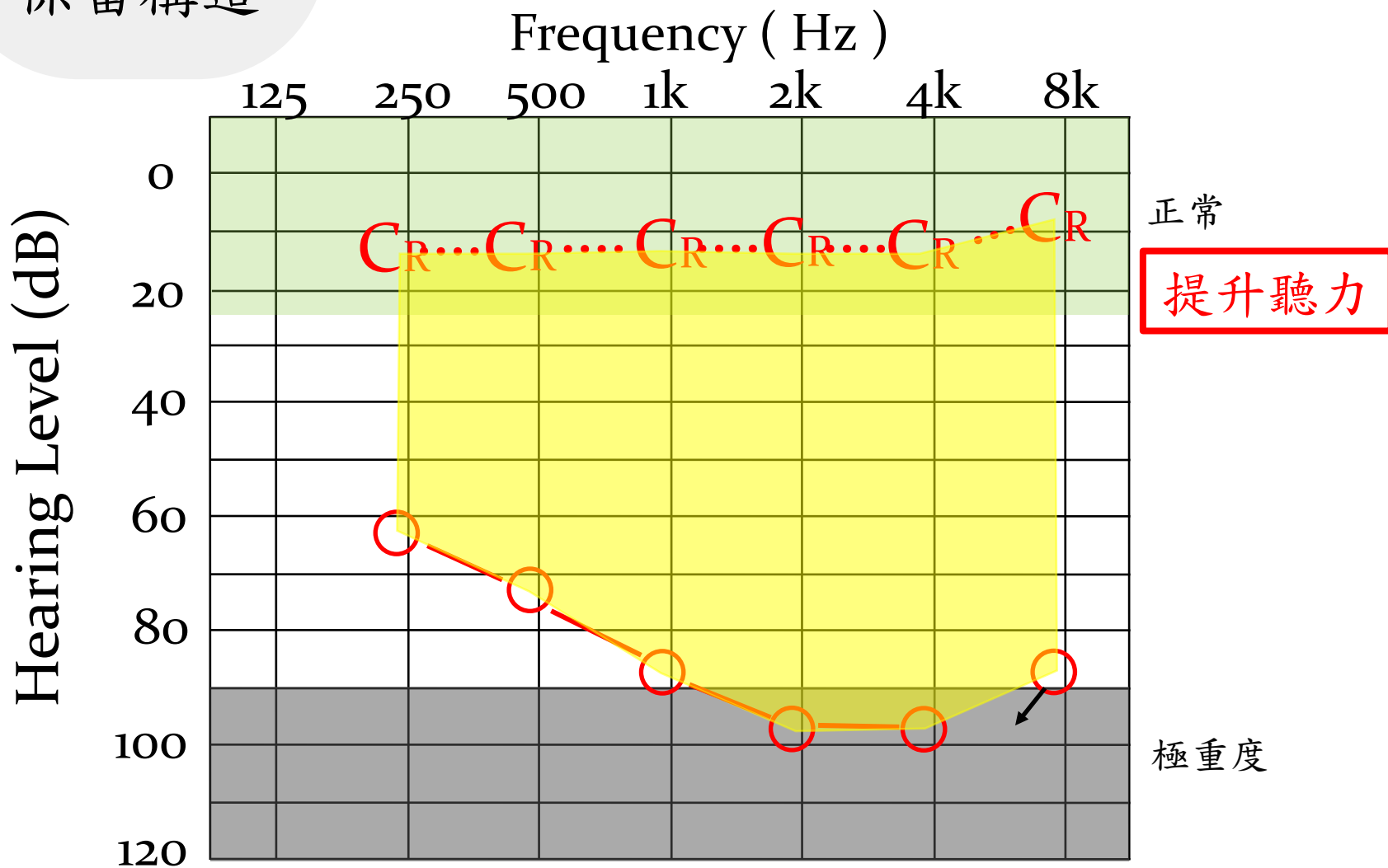
一日開機



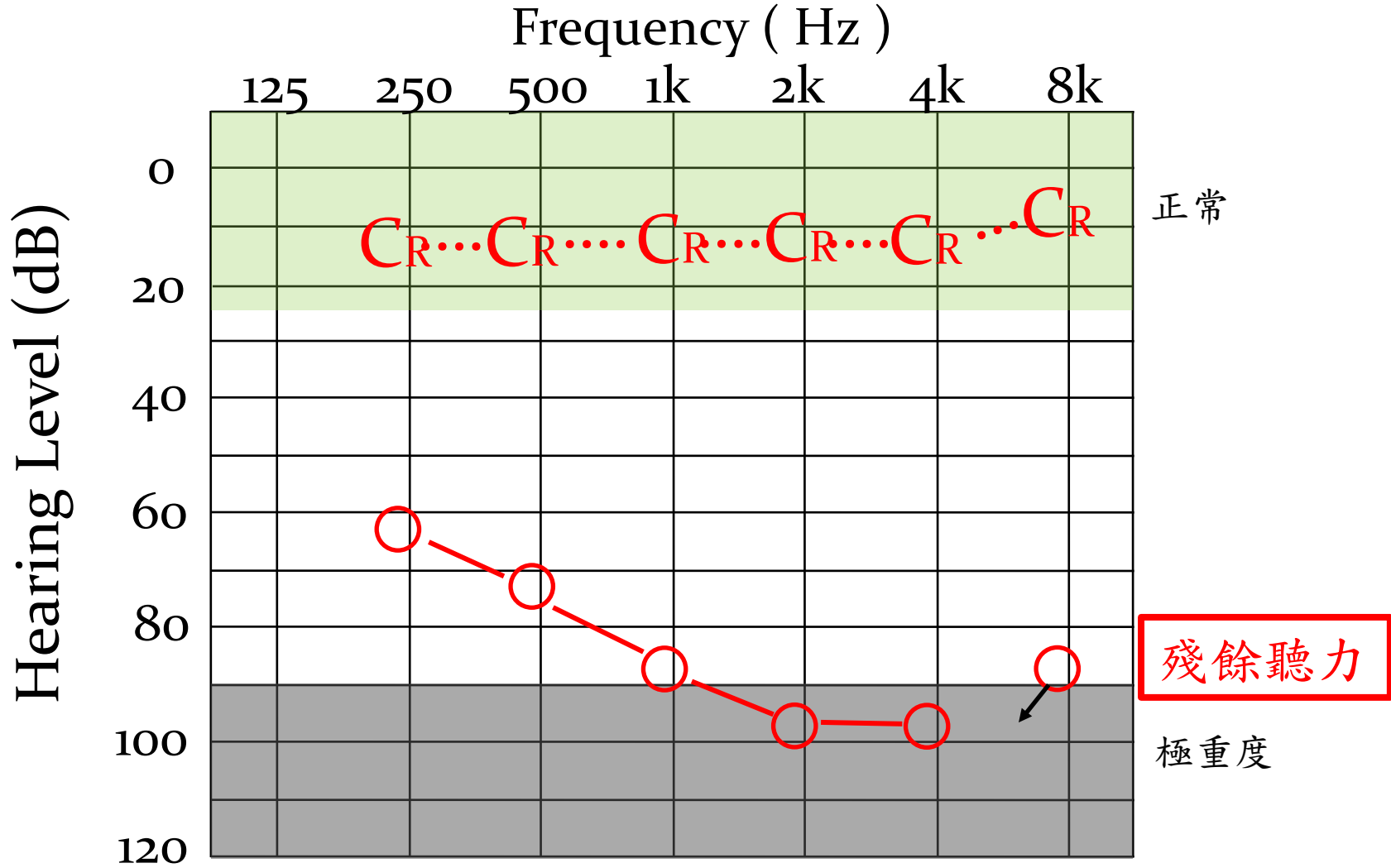
#3

殘餘聽力
保留構造

手術主要目標



手術次要目標

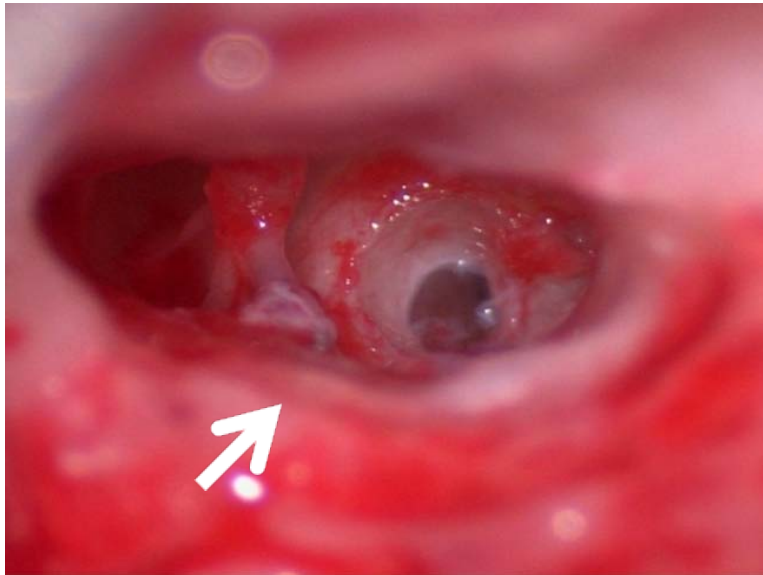


實證醫學：切口的選擇

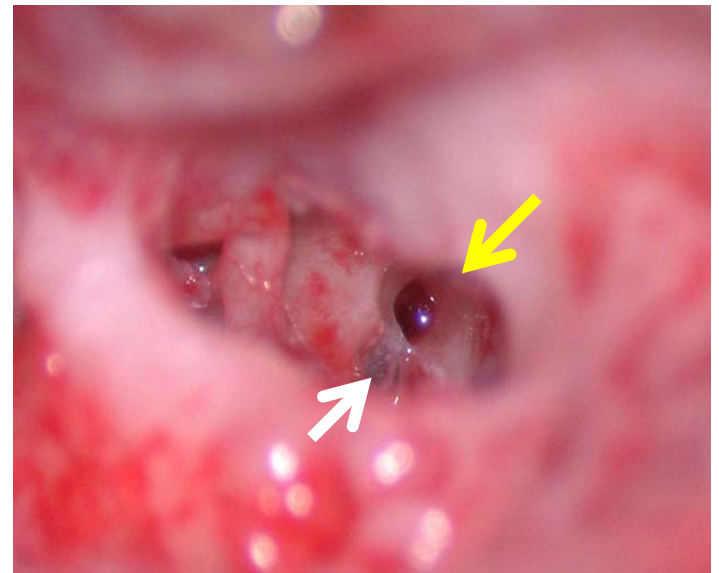
The Laryngoscope
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Rhinological and Otological Society, Inc.

Residual Hearing Preservation After Cochlear Implantation via Round Window or Cochleostomy Approach

Chuan-Hung Sun, MD; Chuan-Jen Hsu, MD, PhD; Peir-Rong Chen, MD; Hung-Pin Wu, MD, PhD



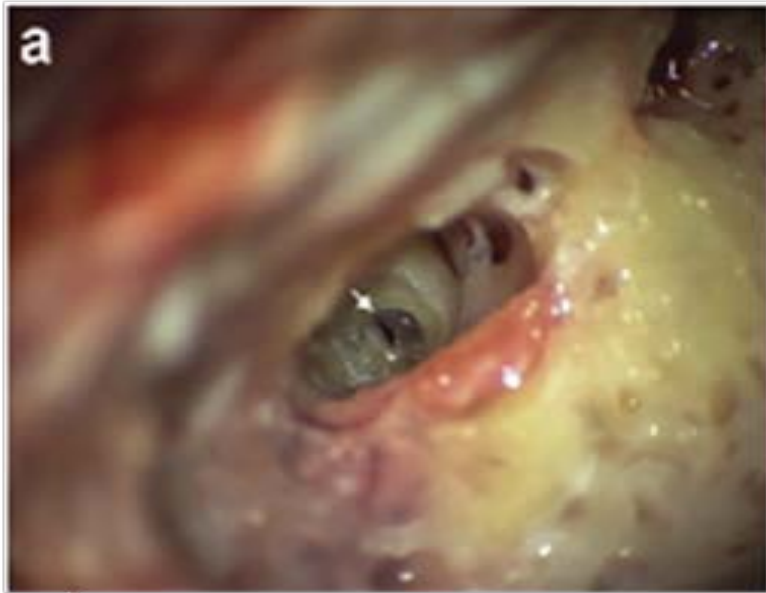
Round window



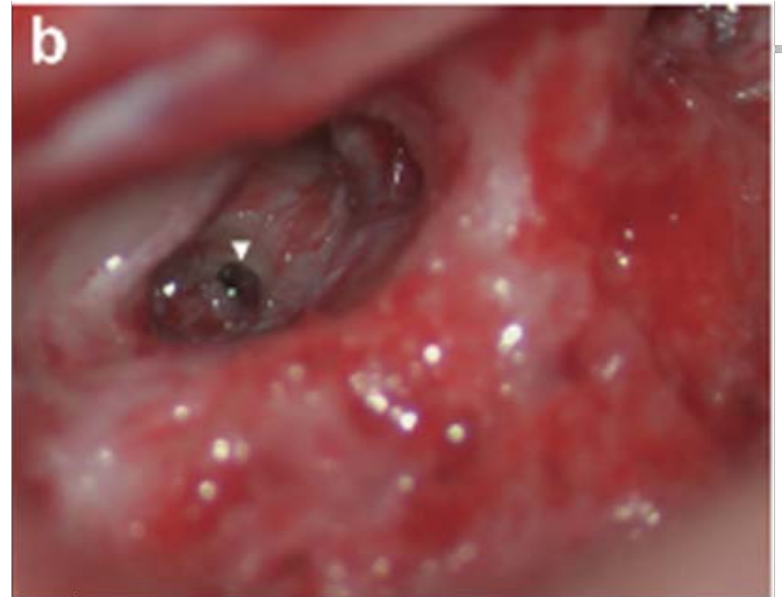
Cochleostomy

#3

切口大小



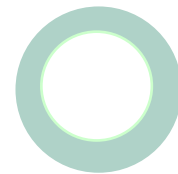
VS



細切開(slit)

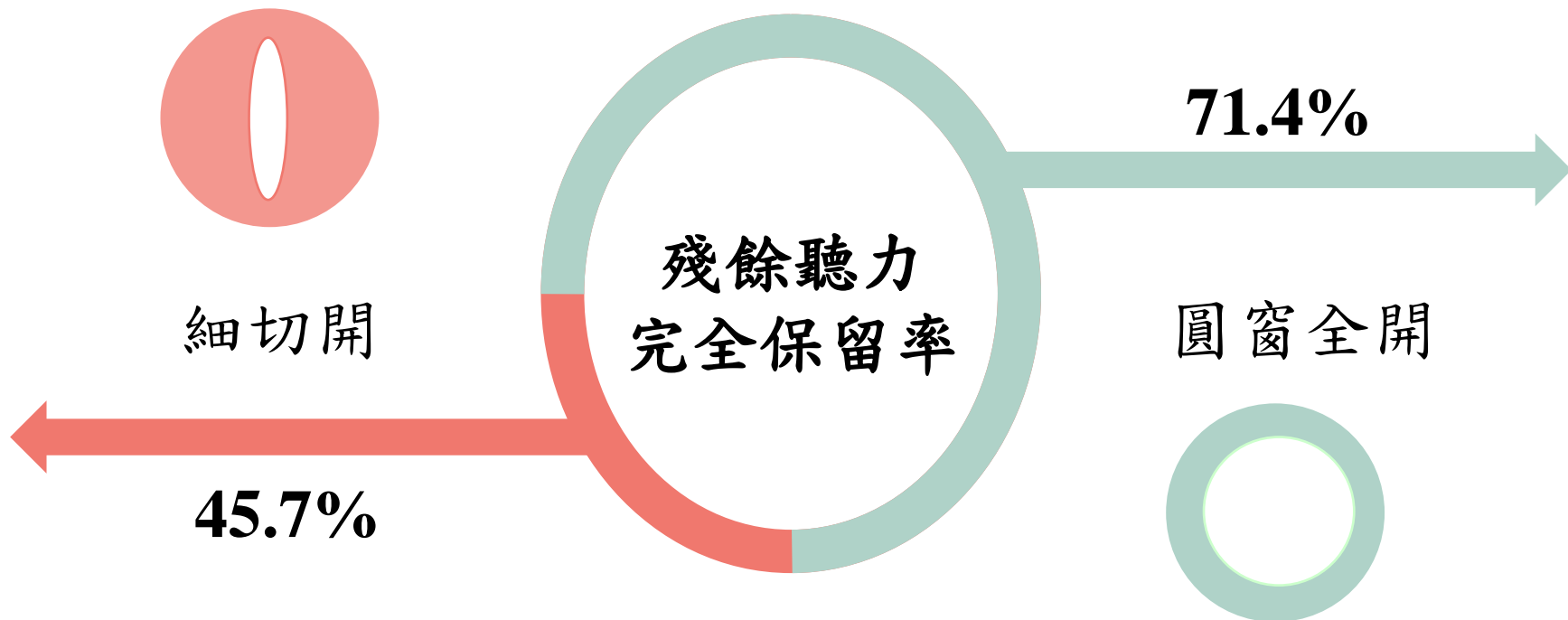


圓窗全開(open)



#3

兩種切口方式比較



降低類固醇使用



術中一次性塗於電極上

住院期間持續給予

皆可保留殘餘聽力

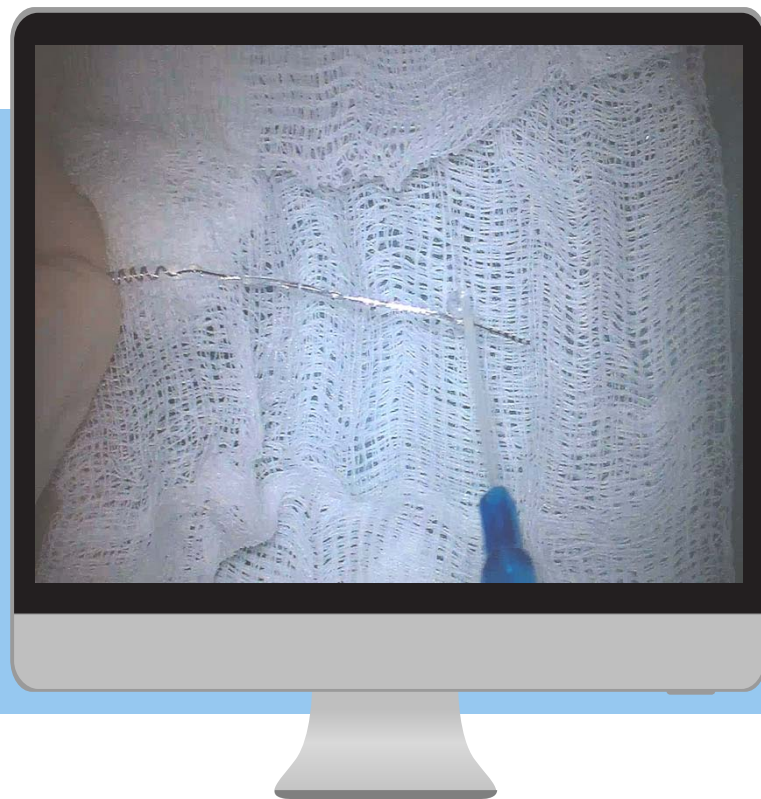
(Wu, H. P., et al., 2020)

#3



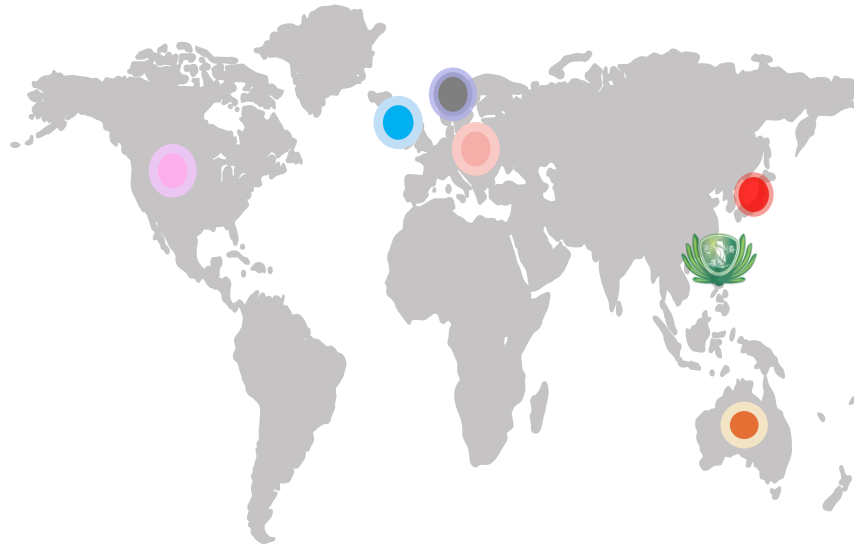
類固醇塗於電極上

- ✓ 保留殘餘聽力
- ✓ 降低大劑量使用類固醇之副作用
- ✓ 未來人工耳蝸電極設計新方向



#3

殘餘聽力完全保留率



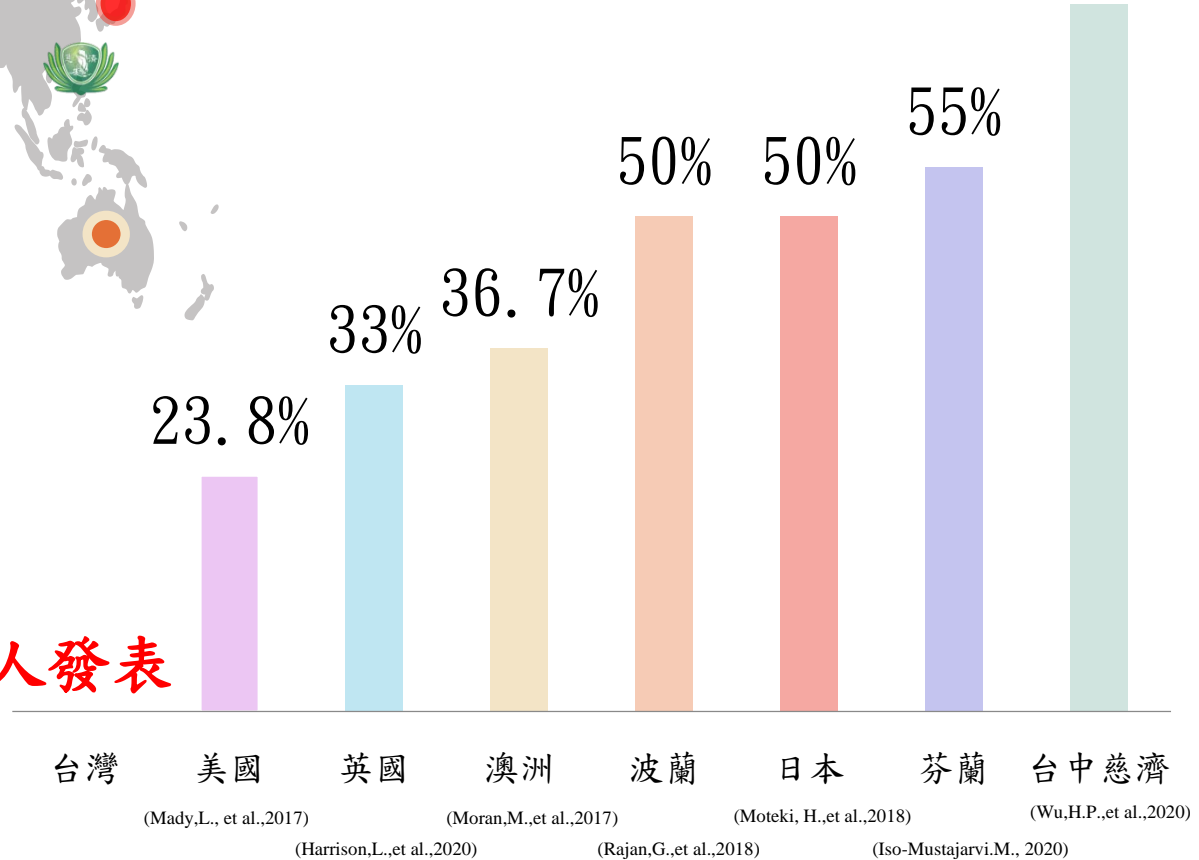
71.4%

HEARRING formula

$$HP = \left\{ 1 - \frac{(PTA_{post} - PTA_{pre})}{(PTA_{max} - PTA_{pre})} \right\} \times 100$$

(Skarzynski, H., et al., 2013)

無人發表



*除台中慈濟外，目前台灣其他人工耳蝸中心無殘餘聽力保留率相關之研究發表

Feasibility of early activation after cochlear implantation

Received: 18 April 2019 | Revised: 4 August 2019 | Accepted: 30 August 2019
DOI: 10.1111/coa.13427



ORIGINAL ARTICLE

WILEY

Feasibility of early activation after cochlear implantation

Chuan-Hung Sun^{1,2} | Chan-Jung Chang¹ | Chuan-Jen Hsu^{1,2} | Hung-Pin Wu^{1,2}

¹Department of Otolaryngology, Taichung Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taichung, Taiwan

²School of Medicine, Tzu Chi University, Hualien, Taiwan

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Email: hungpin_wu@yahoo.com.tw

Abstract

Objectives: The purpose of the study is to investigate feasibility of early activation after cochlear implantation by evaluating long-term impedance change and speech perception.

Design: Case-control study

Setting: Between July 2015 and December 2016, we prospectively enrolled 20 subjects for early activation (within 24 hours after cochlear implantation). On the other hand, from November 2013 to July 2015, 20 age- and sex-matched control subjects from the database of cochlear implantees treated with conventional activation schedule (4 weeks after surgery) were retrospectively enrolled.

Participant: Forty patients who underwent cochlear implantation surgeries.

Main outcome measures: The series impedance and speech perception score of both groups were compared.

Results: No statistical difference in long-term follow-up between the two groups was found using GEEs and multivariate analysis. In the early activation group, impedance reached a steady level by the 2nd postoperative week, and the hearing perception ability significantly improved by the 4th postoperative week.

Conclusion: This comparative study illustrated sequential impedance data during early activation (24 hours) and conventional activation (4 weeks) after CI surgery. There were no major complications in either group, and the safety of early activation with respect to impedance changes, postoperative residual hearing preservation and speech perception scores were non-inferior to that of the conventional group. Therefore, in this study, we established the feasibility of early activation 24 hours after cochlear implantation.

#4

一個月 VS 一日開機

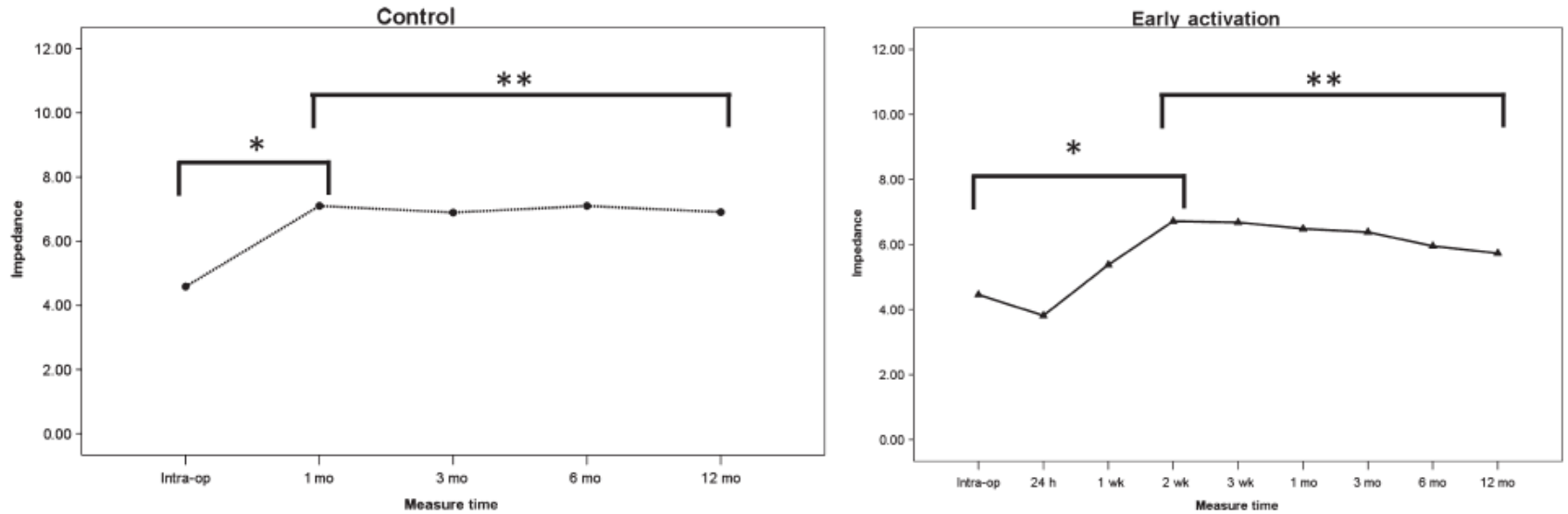


FIGURE 2 Subgroup analysis according to the timing of measurement. In early activation group, impedance was higher when measured 2 wk after implantation than when measured intraoperatively, 24 h and 1 wk after implantation ($P < .05$). The impedance was stable since 2 wk after implantation. Stable impedance was not observed until 1 mo after implantation in the control group, which received the conventional activation protocol. Significant difference was labelled as * while difference did not achieve statistical significance was labelled as **

#4

一日開機的好處

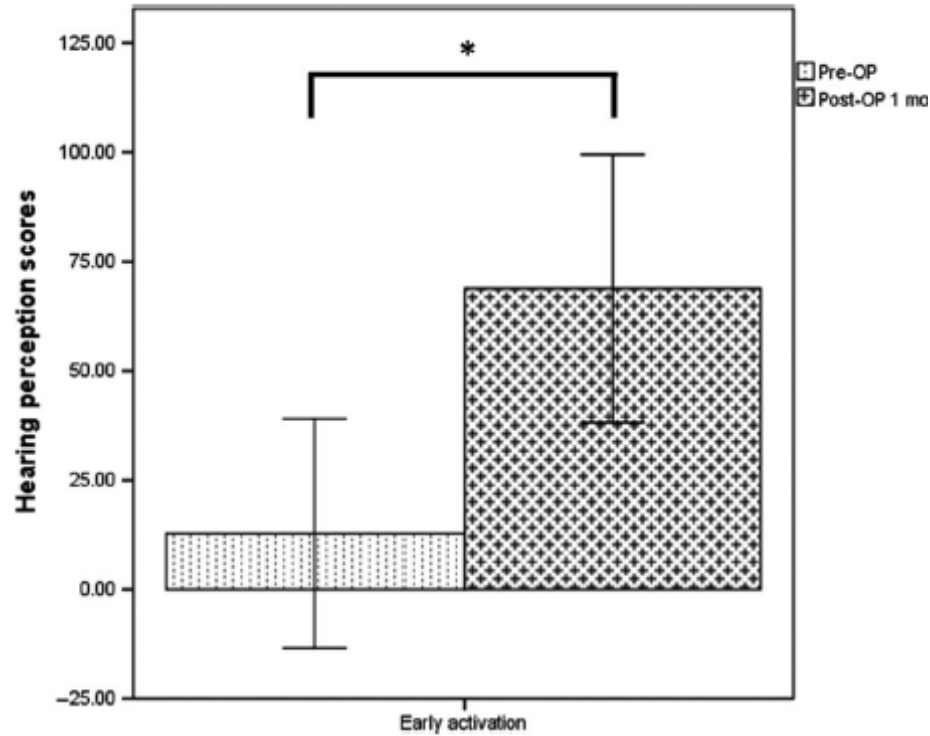


FIGURE 4 Significant improvement could be observed as early as 1 mo after implantation in the early activation group ($P = .001$). Significant difference was labelled as *



完善術後流程

早期開機

- 24 小時開機
- 確認植入體
- 及早享受人工耳蝸之便利

術後追蹤

- 聽語護照
- 個案管理系統
- 專屬資料夾

病友交流

- 年度病友會
- 個案互相交流
- 增加與醫院之緊密度

金象獎項

- 鼓勵表現自我
- 幫助建立信心
- 協助融入社會