Indian Journal of Otology
Vol.5, No.4 (December.99), 176-178

EDITORIAL

VANQUISHING OF DEAFNESS (COCHLEAR IMPLANT)

Hearing loss is usually treated as a stigma leading to isolation from society hence to depression even the educated family members feel uncomfortable shouting for conversation and hearing aid is looked as a symbol of stigma as senility and sometimes as sign of mental incompetence too. The efforts are being made to restore hearing by surgical corrections or by providing hearing aids.

The various procedure and aids for deafness can be dated back to preliterate era. The earliest supplement to hearing was placing a cupped hand behind the ear enhancing the perception of sound by amplifying and improving the directionality. The initial artificial device to aid the hearing were trumpets, animal horn shells and artificial tympanums used for the repair or to close the perforated tympanic membrane. The animal horns and conch shells were used to improve hearing even in Roman times and before. Naples have discussed to make a hearing device following his observation of animals with sensitive hearing and Le Cat in 1748 used a tortuously shaped tube to emulate the shape of different part of ear including the inner ear. Somehow shankhe (Conche) has been used from prehistorical era in India to generate sounds may be for better and for off hearing. Having a similarity of shape with cochlea later on bone conduction was realized and better hearing with bone conduction hearing aid was tried. In 1876 Paladino described "Fonifera" a rod forked at one end with a small cup at the other end which the listener held on his mastoid. The forked end was to be placed at the larynx of speaker[1].

The history of electrical hearing aid can be traced to 1892 when first patent was granted in united states but the real wearable electronic hearing aid was introduced in 1930 in which a separate battery pack was not required. The 1950 was the hallmark in the history of electronic hearing aid when transistorized eyeglass binaural hearing aid with mercury batteries was possible. Then digital and analog hearing aid came simultaneously. In 1960 December, Dr. William House well known otologist and Dr.John Doyle neurosurgeon worked on the electrical activity of the surgically exposed eighth nerve and on January 9, 1961 placed a single wire electrode in the seala tympani through an opening anterior to round window which was replaced by four channel electrode (on 1st February) within a month time and a major break through in speech reception for the nerve deafened had been achieved and an era of cochlear implant began with a rapid acceptance[2]. Chouald from France was the first to be convinced that the most successful results will be obtained on the youngest patients. Dr.House started implanting children in 1980. In 1986 nucleus 22 from Australia was granted approval by FDA and in 1990 FDA granted approval to nucleus to market.

Fig.1: Allhear Cochlear Implant in sterilized supply pack

Fig.II: Demonstrating the active electrodes and raw (non insulated) area to be installed in cochlea.

Fig.III: Demonstration making the site for incision in Post aural region for Cochlear Implant.

its implant for use in children (Graeme C.M. 1996)[9]. Gradually the criteria of selection for cochlear implant are relaxed with the view that younger the better, minimum age falling to two year and at places even below one year. Now it has been realized that earlier such individuals and children are identified and dealt with greater the level of speech production and linguistic competence[3]. With rapid growth in cochlear implantation especially in children and audiological data which seem to show tremendous gain in reception and production of speech, number of children have been integrated in normal stream[4]. British medical council reports "Is an efficacious treatment for profound deafness in many children who lose their hearing after the acquisition of spoken language to re-acquire useful auditory and linguistic skills. Particularly if they are implanted soon after losing their hearing. It allows children who were either born deaf or who lost their hearing before acquiring spoken language to develop auditory and speech perceptual skills. Particularly if they are implanted when young." Summer field & Marshall 1995[5].

So far we have performed two operation on Postlinguestically deaf young. The criteria was profoundly deaf can not be benefited with hearing aids. Both were in good general health with sufficient intelligence and mental health, educated alongwith normal ENT examination. In both the cases there was residual hearing and in both the cases spiral C.T.Scan of cochlea was done to see the patency of cochlea to assess the surgical success of putting the electrode. House implant via posterior

Fig.IV: Demonstrating Allhear implant secured in postition by silk sutures.

Fig.V: Demonstrating wound closed in two layers by interrupted sutures.

tympanotomy through round window into the cochlea was placed. Ground electrode was placed on the temporal bone. On the head device was switched on after four weeks.

Both patients are on rehabilitative therapy can perceive sound and progressing satisfactorily. I agree with the statement of Dr.William House, "Today there is no longer any question that it works and patients get timing, intensity and some frequency information. I have no objection to developing and researching 4-8-22 channels or even 50 channels implants, but once deveoped and tried on a number of patients. These complex systems must be researched to see if fewer channels can accomplish the same results[7]. We must make an attempt to improve them and make them economical, which could be purchased by Indians. There are at least 4 millions of people who may need this device of Cochlear Implant as the not be benefitted from optimal use of hearing aid b of severity of hearing loss. They are 100% audiolo handicapped[8]. The Indian Institute has decided to p all facilities free to cochlear implant patients i times to come. Why to waste money on neuro drugs like encephobal, genicobilowa, the total ar of financial investment in these salts by Govt. can pr some hearing to few deaf patients.

Cochlear implantation has now become a recog clinical entity and may be considered as a signif sub-specialty within the discipline of otology[9]. Fu research, though, is necessary to reap the benefits have already been achieved at this point of tim

DR.M.K.TANEJA Ed

REFERENCES

1. Richard L.Goode, Mary L.Rosenbaum, Anthony J.Maniglia. The history and development of the implantable hea aid. *Otolaryngologic clinics of North A erica*. 1995:Vol.28 No.1.;1-15.
2. Leland R.House. "How I do it" - Otology and Neurology - A Specific issue and its solution. Cochlear impla the beginning. *Laryngoscope*. 1987:97;996-997.
3. Davis A., Wood S. The epidemiology of childhood hearing impairment: factors relevant to planning of servic *British Journal of Audiology*. 1992;26:77-90.
4. Stuart S.Blume. Histories of cochlear implantation. *Social Science & Medicine* 49(1999);1257-1268.
5. Summerfield A.Q., Marshall D.H. Cochlear implantation in the UK 1990-94. Medical Research Council Institu of Hearing Research, Nottingham. 1995.
6. Fraser J.G., Cooper H.R., Hazell J.W.P., Phelps P.D., Lloyd G.A.S. The UCH/RNID cochlear implant programm patient selection. *Brithish Journal of Audiology*. 1986;20:9-17.
7. House W. Cochlear Implants: Past, Present and Future. *Fraysse B.DEguine O. (eds): I plants: New Prespective Adv. Otorhinolaryngol. Basel, Karger.* 1993;Vol.48:1-3.
8. Deka R.C., Cochlear implant surgery in India: AIIMS experience. *Indian Journal of Otology*. 1999;Vol.5, No.1:7 8.
9. Clark M.Graeme: Past, present and future-A review. *Indian Journal of Otology*. 1996;Vol.2, No.4:155