Indian surgeons performed a successful auditory brainstem implant on a four-year-old girl with complicated hearing loss, giving her new hope

By MONALISA DAS

Breaking the barriers

IT'S DIFFICULT to describe the range of reactions experienced by parents who are unable to communicate with their child for any reason. Sadness and frustration are inevitably coupled with a desperate desire to fix the problem.

These feelings are what drove Aliya and Ali Muneer Hussein from Iraq to New Delhi to get the hearing disability of their four-year-old child attended to. Their daughter Fatima was born with a hearing defect, diagnosed when she was one. "At this time the doctors confirmed that she suffered from hearing loss in both ears," says her father, Ali. Ideally, a cochlear implant surgery would have solved the problem. But in Fatima's case there were several complications. First, she had a very small cochlea — the part of the ear that converts sound waves into electrical signals. Also her hearing nerve, which carries this electrical signal to the brain, was non functional. These complications ruled out a regular surgery for her.

"Fatima had bilateral sensorineural hearing loss with underdeveloped cochlea, a condition that is quite rare. Auditory brainstem implant (ABI) is the only option in such cases, but it involves a high risk of stroke, paralysis, or even death because the brain is operated upon," says Dr Ameet Kishore, senior consultant surgeon, ENT, Indraprastha Apollo Hospital. Only 2-3 per cent of all cases of profound deafness need ABI which is jointly conducted by an ENT surgeon and a neurosurgeon.

Since this operation couldn't be done in Iraq, the couple brought their daughter to Delhi for the procedure last month. Fatima successfully underwent ABI procedure during which an electrode was inserted into her brainstem and a receiver was fixed to the skull. This is the fourth procedure of its kind in India, and the first one done by an Indian team of surgeons. "ABI is a tricky operation as it's done in the brainstem. This part of brain is the centre for regulating several functions including hearing, breathing, swallowing food, blood pressure, heart rate, facial expressions, etc. The nerves are so tightly packed that even a slight mistake could lead to disabilities, paralysis or even death during the operation," says Dr Pranav Kumar, neurosurgeon, Indraprastha Apollo Hospital who operated on Fatima. The operation took nine hours, and several tests were done to confirm the success. Now Fatima awaits hearing and speech therapy that will gradually familiarise her with sounds. But her mother Aliya derives pleasure from just being able to whisper "I am your *umi* (mother)" into her daughter's ears.

More than 278 million people in the world suffer from hearing loss and in India, 6.3 per cent of the population is affected by it. Based on the anatomy of the ear, hearing losses can be classified into conductive or sensorineural. While the former refers to hearing problems in the outer or middle ear, the latter refers to hearing loss caused by problems in the inner ear, cochlea, and at times even in the auditory nerve. In both cases, the problem could either be congenital or acquired.

AMONG those with congenital deafness, some could be genetic but 70 per cent cases are non-genetic as is Fatima's case. Premature delivery, low oxygen during birth or jaundice immediately after birth may cause sensorineural hearing loss. Infections such as rubella and syphilis acquired during pregnancy may also lead to deafness. "Infections, trauma to the ear, excessive wax accumulation, constant exposure to loud noise, any hole in the ear drum, or bones of ears getting either fixed or dissolved could lead to hearing loss among adults too," says Dr Anurag Jain, senior consultant, ENT, Fortis Hospital. Infectious diseases such as meningitis, measles, mumps and chronic ear infections also lead to deafness. Many times ototoxic drugs such as some antibiotics, chemotherapy drugs, or anti-inflammatory medicines can also cause it.

Forty-two-year-old Ravi Anand is a case in point. Ten years ago he developed viral fever that eventually led to partial hearing loss in both ears. "This was a big hindrance in my life," says Anand. He tried to use the hearing aid prescribed by doctors but wasn't satisfied. Recently he went for cochlear implant surgery for one ear and says this has helped. "My one-to-one conversations are much more effective now," says Anand. Encouraged by this improvement, Anand is planning to get the same surgery done in his other ear too.

"Basically treatment of hearing loss is dependent on the severity of the deafness, its type, and also structure or anatomy of the ear," says Dr Kishore. Cochlear implant surgery is a common treatment for those with sensorineural hearing loss. However, surgery is done only in cases where a hearing aid or medicines don't work. "There are a host of hearing aids that assist people with different levels of hearing disabilities," says Dr Ajay Swarup, HOD, ENT, Sir Ganga Ram Hospital. Those who can't use wearable hearing aids due to excessive wax can go for implantable hearing aids such as baha. "It's a one-time implant that is fixed to the skull and transmits sound through bones," says Dr Jain.

Anyone with a hearing aid has to be careful to avoid infections. "Care has to be taken while making the mould in the ear where these aids are inserted. Also, one has to maintain personal hygiene and periodically get an ENT check-up. Be mindful to keep the volume of the aid at a moderate level too," cautions Dr Swarup.

Lastly, one should be extremely cautious about ear problems, especially in cases of viral infections and autoimmune diseases. "If such patients complain against even mild hearing problems, they must be rushed to a doctor," says Dr Jain.

monalisa.das@mailtoday.in

'A COCHLEAR IMPLANT HELPED'

Five years ago budding techie Pradeep Tehlan suffered a severe head injury during a road accident, damaging both his ear drums and deafening him. "Things changed drastically. Communication became a big challenge for me and I lost my job too. I barely moved out and it was tough to relate with anybody," says 29-year-old Tehlan. The hearing aid prescribed by doctors was not effective so he went in for a cochlear implant surgery last year, followed by speech therapy. Things have started improving since then. "I have got 95 per cent of my hearing back," chuckles Tehlan. Recently he got a new job and is back to being able to handle communications effectively.

AVOID THIS TO KEEP YOUR HEARING INTACT

EARPHONES
High pitch vibrations produced by earphones can damage ear drums, leading to partial deafness. Constant use can make you accustomed to loud noise, thus affecting your hearing ability.

EAR SCRATCHING
Inserting pencils, pins, keys, or other objects to scratch your ears can cause infections or damage the ear drums. Even excessive use of ear buds is bad as this pushes the wax further inside the ear canal

HOME REMEDIES
Putting hot mustard oil or other home remedies for ear pain or wax removal can cause fungal infections. Only almond oil or glycerine are recommended for those who have a wax build-up.