Star health

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New hope for profoundly deaf patients

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Normal hearing is an essential requirement for the development of speech and personality in children. It is also important for an individual to perform his/her activities at an optimum level. Any alteration in this norm may lead to disability.

Worldwide, approximately one person in a thousand is born deaf. Almost an equal number of people born with hearing will develop deafness during their lifetime. About 13m people are suffering from variable degree of hearing disability of which 3m are suffering from severe to profound hearing disability in Bangladesh.

These people with hearing disability suffered a lot during their lifetime as there was no suitable remedy. But now-a-days cochlear implant brings them to a new world overcoming the disability and this new technology can make their life like other normal individuals.

Pre-operative selection procedures

Once a person is referred to the cochlear implant center extensive testing is done to determine the suitability of candidate. This evaluation usually includes extensive audiological testing, psychological testing, examination and tests performed by the surgeon. X-rays, CT scan, MRIs, physical examination and counseling to assure suitability and motivation to participate in the process. It is important that the candidate/parents understand what the implant will and will not do and also understand the commitment required for care and follow-up services.

Who is best suited for a cochlear implant?

It is generally agreed that the best adult candidates are those who -

λHave severe to profound hearing loss in both ears

λHave had limited benefit from hearing aids

λHave developed verbal or preverbal communication skills

λHave ears free of infection

λHave inner ear properly formed

λ Have auditory (hearing) nerve intactHave no other medical problems that would make the surgery risky

λHave a strong desire to be part of the hearing world and communicate through listening, speaking, and speech reading

Children can also be candidates for cochlear implants. Children as young as 14 months of age have received cochlear implants and the potential exists for successful implantation at younger ages.

It is generally agreed that the best child candidates -

λHave profound hearing loss in both ears

λHave had little or no benefit from hearing aids

λHave developed verbal or preverbal communication skills

λHave ears free of infection

λHave inner ear properly formed

λ Have auditory (hearing) nerve intactHave no other medical conditions that would make the surgery risky

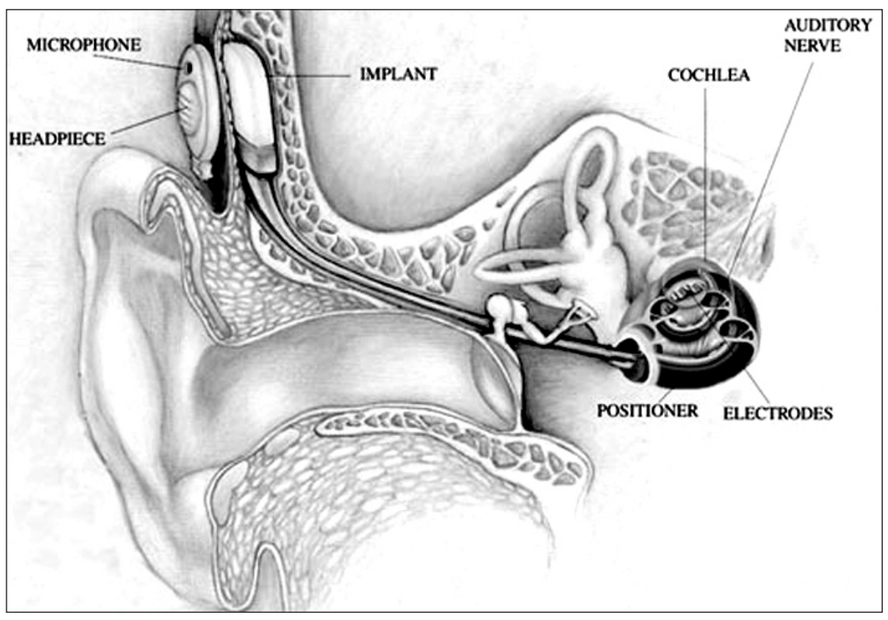
λAre involved (when able), along with his or her parents, in all aspects of the informed consent process

λUnderstand (when able), along with his or her parents, their individual roles in successful use of cochlear implants

λHave (when able), along with his or her parents, realistic expectations for cochlear implant use

λAre willing to be involved in intensive rehabilitation services

λHave support from their educational program to emphasise the development of auditory skills



Result of cochlear implant

The device is safe and reliable. There is rarely a complication.

Procedure to place the implant may soon become a distant memory.

It varies individual to individual and depends on -

λAge at time of deafness

λDuration of deafness

λAge at implant surgery

λStatus of remaining auditory nerve fibres

λTraining etc.

Post-operative rehabilitation

What happens after operation?

The purpose of the adult and children's rehabilitation programme is to help patients and their families assimilate the cochlear implant into their daily lifestyle. To achieve this, team offer services that aim to optimise patients' hearing, help developing listening and communication skills, promote speech and language acquisition and deal with medical issues.

Immediately following the operation (after 4-6 weeks) device is activated. An adult would normally attend the clinic once a week for a period of 2 to 3 months. As they become more proficient in the use of the device, less programming (Mapping) of the speech processor is required, they would only need to visit the clinic every 6 or 12 months or when the need arises.

With children, regular listening, speech and language therapy would be maintained for as long as appropriate, which could be a number of years.

How is a person's hearing optimised?

If a person who can hear any sounds before operation, they need to be given the speech processor and headset. These components transmit the sound up to the implant so they must worn whenever the person wants to hear. The Team will instruct the person in the use and care of the device.

The functioning of each person's auditory (hearing) pathway is different, so each speech processor needs to be programmed to output sounds that suit the wearer's hearing. The programming (Mapping) is done by the Team and it involves setting current levels that produce just audible sounds and comfortably loud sounds for each electrode in use. For the implanted person, this means sitting next to a computer which will send signals to the speech processor and indicating which sounds are very soft and which sounds are loud. The speech processor may need to be Re-Mapped frequently in the first few months as the ear takes time to adjust to the new form of stimulation. This can be very frustrating for the implanted person as it means the quality of the sound that they hear may be changing. As the person and their body adjust to the device, the need for Re-Mapping usually becomes less frequent.

How do people learn to listen with their implants?

It takes time and practice before people become comfortable in using the device, and thinking of the sounds they hear as their 'normal' sounds. The Team try to speed the process up by providing listening tasks at each session. These tasks involve listening to words, sentences and conversations, and practicing using different strategies to improve communication situations.

In the case of children who have limited speech and language abilities, regular therapy is offered to the children and parents, to help in promoting the development of these skills.

Another important aspect of the clinical program is counseling. Where patients are experiencing difficulties relating to the effect of device on their lifestyle, relationships and family, the clinic social worker is available to help.

Prospect of cochlear implant in Bangladesh

A good number of patients really need cochlear implant in our country. In the past we were not ready to accept the programme in our country due to lack of initiative and high price of the program. Recently cost (Price of the device evaluation, surgery, rehabilitation) of the programme is getting down.

If we can develop a center and equipped it with technology and skilled manpower (team) we can start the programme in our country successfully. I hope in near future we will be able to start CI programme in Bangladesh.

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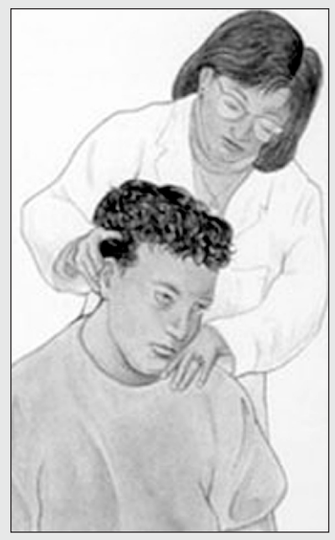
Exercises for neck pain



The primary goals of an exercise programme for cervical spine are to make the muscles of neck, shoulders and upper back strong and flexible. The following is a series of safe and effective abdominal exercises that will help alleviate neck pain.

Crunches

With your arms crossed in front, bend your knees and keep your feet flat on the floor. Lift your upper back off the floor and ower down. Every time you lift emphasis the contraction of your abdominal muscles. You should exhale as you lift up and inhale and you lower down. Go through a series of 10.

Follow your first set of crunches with an alternative to the forward crunch, a cross over. Reach to the right and then reach to the left. Taking it up 10 times. The next set of crunches will take you all the way up. Concentrate on keeping your neck in-line with your spine and when you get to the top give a twist as if you were going around a skewer. For this crunch you will want to keep your heels on the ground. Again continuing for a series of 10.

Next try a double crunch. Keeping your lower legs parallel to the floor cross your hands in front of your chest. Then take it up into a bent leg, lower down, and extend your legs almost straight into an extension and then alternate. Continue for a series of 10.

All three of these exercises can be done in a series of three sets, with 15 to 20 reps in each set.

Leg raises

Lying on your stomach spread your feet as far apart as the mat is wide. Place your hands behind your head or if you have neck pain, behind your back. Then lift your legs up along with your chin, as if you were in a skydive position. Hold for a count of 10. Continue for a series of 10, working up to 15 to 20 reps.

Bridge pose

Lie on your stomach with your body propped up on your elbows. Focusing on a horizontal posture move, that creates a board-like structure, come up on your toes while keeping your neck in-line with your spine and your abs tight. You should feel like you have to hold your core in to be able to maintain this pose. Stay in the pose for 10 seconds before relaxing and then returning to the pose. Continue to move into the pose for a series of 10.

Exercise ball

Start by sitting on the ball and then walking the ball so that your low back is resting on it. Cross your hands in front of your chest, keeping your neck in-line with your spine. Leaning forward, move into a crunch. Remember to exhale on the crunch. Continue for a series of 10.

Human rolling pin

Kneel down on the mat and reach forward on the ball so you just have your fingertips on it. Then roll, down on the ball gradually resting the back of your arms on it as you come down. Keep your body in a straight line the entire time. Then roll back in. Work straight down on your abdominals in the front while emphasising and strengthening your back muscles. Go through a slow series of 10.

Pike

Starting with your body forward over the ball, slowly move forward to the point where your hips are on the ball. Then roll your legs right on top of the ball until you are in a knee tuck. The series is a combination of a tuck and extension back. Go through a series of 10.

A modification on this exercise is to come into a Pike position once you have rolled your legs on top of the back, changing the combination to a tuck, pike, tuck, and extension back. Again, a series of 10 is a good starting point for this exercise.

Source: http://www.neckreference.com

HIV transmission through breast-feeding

STAR HEALTH DESK

In the past three decades, strategies to reduce child mortality and to promote family health have resulted in considerable improvements in child health. Promotion of breastfeeding has played an important role since breastfeeding contributes to reduced mortality by providing optimum nutrition, by protecting against common childhood infections and by its child-spacing effects.

However, the emergence of HIV threatens to reverse gains in child health, since children are at risk of acquiring HIV infection through transmission from an HIV-infected mother. It is recognised that breastfeeding by an HIV-infected mother increases the risk of HIV transmission to her infant.

Although HIV transmission through breastfeeding is only partially responsible for this increase, HIV and infant feeding is an important public health issue in recent days. In our country HIV transmission through breastfeeding seems to be a negligible cause of child mortality. But we should draw our attention to the fact for the near future for the vulnerable portion of our population. This is the high time to deal with the public health issue as prevention is better than cure.

Mother-to-child transmission worldwide

Mother-to-child transmission (MTCT or vertical transmission) of HIV, which can occur during pregnancy (in utero infection), delivery (intrapartum infection) or breastfeeding, is responsible for more than 90 percent of HIV infection in children worldwide. Both HIV type 1 (HIV-1) and HIV type 2 (HIV-2) can be transmitted from mother to child.

The remaining 10 percent of paediatric infections are attributed to transfusion with contaminated blood and blood products, use of contaminated medical equipment, other practices that cut or pierce the skin or sexual contact.

HIV infection in women

Most children acquire the virus through transmission from an HIV-infected mother. Therefore, the incidence of paediatric HIV reflects that of HIV infection in women of childbearing age. In areas of high seroprevalence, a significant number of children are at risk.

Mother-to-child transmission (MTCT) of HIV focuses attention on women, but the use of the term MTCT is not to imply blame, whether or not a woman is aware of her own infection status. A woman can acquire HIV through unprotected sex with an infected partner, by receiving contaminated blood or through exposure to unsterile instruments or medical procedures. HIV is often introduced into the family through the woman's sexual partner, often the father of her child.

Evidence for breast-milk transmission

Breast-milk transmission of HIV has been well documented. There are also reports of infants, with no other known exposure to HIV, who were infected through wet-nursing and through pooled breast milk.

Mechanisms of breast-milk transmission

Although HIV has been detected in breast milk, mechanisms of breast-milk transmission are not yet fully understood. The respective roles of cell-free and cell-associated virus in breast-milk transmission are not known, nor is the association between plasma and milk virus levels understood. The portal of entry for the virus via the infant mucosa also merits further investigation.

From experiments we get the information that cell-free HIV in breast milk could infect cells of the intestinal mucosa. M-cells, which are specialised epithelial cells found in the Peyer's patches of the intestinal mucosa, may be a mechanism allowing infectious agents such as HIV to cross the intact mucosa. M-cells engulf and transport the pathogen and present it to macrophages that indent the serosal surface of the M-cell.

Timing of HIV transmission during breastfeeding

Transmission of HIV through breast milk can take place at any point during lactation. The persistence of maternal antibodies and the presence of a "window period" during which infection is undetectable using currently available technology, make it impossible to determine whether an infant has been infected during delivery (intrapartum) or through breastfeeding in the period following birth. Therefore, when seropositive women breastfeed their infants, it is not possible to differentiate between HIV transmission attributable to delivery and that resulting from breastfeeding from birth.

Later postnatal transmission through breastfeeding can be determined using currently available diagnostic tools. Studies of infants found to be negative by PCR testing at 2-6 months of age, but who subsequently showed evidence of infection, have provided estimates of the risk of late postnatal transmission.

Colostrum and mature milk

Cell-free and cell-associated HIV-1 have been detected in both colostrum and mature breast milk (milk produced from about 14 days postpartum to the cessation of breastfeeding) of women with established HIV infection. Studies suggest a higher level of cell associated HIV in early milk compared to later, which would reflect the relatively high level of cells in colostrum compared to mature milk.

The potential effect of various factors makes it difficult to draw any conclusions about the relative risk of transmission through colostrum and mature breast milk. First, colostrum and mature breast milk contain different types of cells and different levels of immune modulating components (e.g. vitamin A, immunoglobulins and lactoferrin). Second, the total volume of colostrum ingested by the infant is much

smaller than that of mature breast milk. Third, the infant's immune system is less well developed during the first few days of lactation than in later lactation, while younger infants have an increased blood concentration of maternal antibodies.

Factors associated with the risk of MTCT

The overall risk of mother-to-child transmission (MTCT) is increased by a range of factors related to HIV disease. Low CD4 (main target cells for HIV) counts have been associated with detection of HIV DNA in breast milk.

HIV transmission was significantly associated with vitamin A status, independent of maternal CD4 status. Vitamin A deficiency may increase the risk of mother-to-child HIV transmission by impairing T and B cell function, resulting in increased maternal viral load and reduced antibody concentrations. Alternatively, vitamin A deficiency could be a marker of advanced HIV disease, which may be the cause of the higher observed mother-to-child transmission rate. Vitamin A deficiency in HIV-infected women has been reported to be associated with fissured nipples, which may facilitate transmission of HIV through breastfeeding. Poor breastfeeding techniques, especially poor attachment of the infant to the breast, may result in fissured nipples and hence HIV transmission may be prevented through breastfeeding counselling, and skilled help with positioning and attachment.

HIV infection

Breast milk contains maternal antibodies. All basic forms of immunoglobulins IgG, IgM, IgA, IgD and IgE are present in breast milk. The most abundant is usually secretory IgA. The role of HIV-specific antibodies in breast milk in inhibiting HIV transmission through breastfeeding has been investigated. Breast milk in women with established HIV infection has been found to have HIV-specific IgG, with its wide spectrum of activity against HIV proteins, comparable to HIV-specific IgG in serum.

Other components of breast milk are protective against viral infections. Human lactoferrin has been shown in vitro to have an inhibitory activity against HIV, and lipid-dependent antiviral activity directed at HIV and other enveloped viruses and bacteria has also been described.

Strategies to reduce breast-milk transmission

Primary prevention: The best way to prevent HIV infection of children through mother-to-child transmission, including transmission through breast milk, is to prevent HIV infection of young girls and women of childbearing age.

The risk of HIV infection in women is increased by such factors as immaturity of the genital tract, cervical ectopy, sexually transmitted diseases and poor nutritional status. Cultural, social and economic factors also contribute to HIV transmission by increasing the vulnerability of girls and women.

Strategies to prevent all mother-to-child transmission of HIV, including through breast-milk should be linked to primary prevention programmes that provide education about safer sex, condoms, and diagnosis and treatment of sexually transmitted diseases and that ensure the safety of medical procedures. HIV prevention should be emphasised for women who test seronegative in pregnancy because of the particularly high risk of MTCT if mothers are infected with HIV during pregnancy and breastfeeding.

Replacement feeding: For an HIV-infected woman to eliminate completely the risk of HIV transmission through breastfeeding she needs to feed her infant from birth with suitable replacements for breast milk (such as commercial infant formula or home-prepared formula made from modified animal milks).

Where adequate replacement feeding is not possible, mothers may choose among three other strategies to reduce the risk of breast-milk transmission:

λExclusive breastfeeding followed by early cessation of breastfeeding. Early cessation of breastfeeding may reduce exposure and hence the risk of breast milk transmission, while not eliminating the risk entirely, as the infant remains exposed for the first few months.

λHeat treatment of expressed breast milk

λWet-nursing by a tested HIV-negative women

Early cessation of breastfeeding: Early cessation of breastfeeding reduces the risk of HIV transmission by limiting the length of time that an infant is exposed to HIV through breast milk. Women who are not able to provide adequate and hygienic replacement feeding to their infants from birth may consider this option in order to reduce the cumulative risk of longer breastfeeding duration.

Treatment of breast milk

In vitro studies have demonstrated that heat treatment of breast milk to which a known quantity of HIV had been added, using the Holder pasteurisation method (at 62.5°C for 30 minutes), reduces the infectious titre of cell-free and cell-associated virus by more than five logs and six logs, respectively.

As discussed earlier, breast milk contains substances that inhibit infectious agents. Several studies have reported that HIV is inactivated when milk is left to stand at room temperature for half an hour.

However, all strategies to modify or treat breast milk to render it non-infectious would involve expressing milk and some women may find it difficult to sustain this process for long periods of time. This should not prevent the option being offered and professional support should be provided when women choose it. Expression and heat treatment may also be a temporary solution during periods of increased transmission risk, as in cases of cracked nipples or breast abscess, and for low-birth-weight or sick infants for whom the risk of artificial feeding is greater.

Heat treatment of breast milk is recommended for all milk banks, which should also screen milk donors for HIV.

Wet-nursing by a tested HIV-negative woman: In communities where wet-nursing by a family member is practised this option can be considered. It will be necessary for the wet-nurse to agree to and understand the implications of voluntary HIV counselling and testing (VCT). She would also have to be counselled about HIV and be able to avoid becoming infected during breastfeeding.

Antiretroviral therapy: The use of AZT (zidovudine) during the second and third trimester in pregnant women and in infants during the first six weeks of life, in the absence of breastfeeding, can reduce mother-to-child transmission of HIV by two-thirds

The effectiveness of AZT in reducing mother-to-child transmission has been demonstrated only in non-breastfed infants. It is currently not known to what extent infants who have escaped infection during pregnancy and delivery, following prophylactic therapy in their mothers with AZT, are at risk of becoming infected subsequently through breastfeeding. However, it is likely that antiretroviral therapy around the time of delivery will not be as effective if the infant is then exposed through breastfeeding. Since many HIV-infected mothers may face obstacles to replacement feeding - for example stigma, affordability, risk to the infant of other infections and malnutrition.

The write-up is based on a research paper of WHO and UNAIDS