

Towards Fulfilling the Reconstructive Surgical Needs of Children

An Initiative of Ganga Hospital, Coimbatore, India

Why this Bulletin?

Hand and Microsurgery has been one of the core strengths of Ganga Hospital. We take care of little hands when they are born with different features or the wholeness which nature gave was destroyed by injuries, burns or infection. It is a challenge to treat little hands since it is just not putting back tissues in place, but helping them to lead a normal life. In every little hand that we treat, we are not reconstructing the hand of a child but in fact are contributing to nation building.

Richard Smith, a hand surgeon said, 'Today's patient deserves the best that today has to offer'. The first criteria for this is that people must be aware of what is possible. This monthly bulletin will serve as a vehicle to spread information of what we do and what is possible. Whom is it directed to? Anyone and everyone is the answer. Surgeons will find the technical tips interesting. Our non - surgical colleagues will know the advances that are taking place in the field. Everyone will enjoy the hand vignettes that we plan to put in every issue. Starting August 2024, this will be a monthly feature.

Hope you enjoy reading this and do let us know your thoughts and suggestions.

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(Editors)

Making of the Thumb

All the advances that have happened in the world have been attributed to the development of the opposable thumb and the emancipation of the human brain. Human beings have longer, more muscular and more mobile thumbs than Gorilla, Chimpanzee and Orangutan. The structure of the human thumb with its mobility and stability is hailed as an engineering marvel and has amazed many a scientist. Isaac Newton, the famous physicist and mathematician, has remarked "In the absence of any other proof, the thumb alone would convince me of God's existence".



Orangutan



Gorilla



Chimpanzee



Human

For Children born without a Thumb.....

While the thumb is so important for our day-to-day work, unfortunately some children may be born without a thumb or it may be rudimentary and functionless. Such children do not have the power of pinch or the ability to grasp large objects. Specialised hand surgery units dealing with children can provide a solution to such children by creating a thumb using the index finger. It is not just shifting the position of the index finger. The index ray which has four bones has to be reduced to three to provide the ideal length of the thumb and the available muscles have to be re-positioned to make it functional. Even the skin incisions have to be planned meticulously to wrap up the new thumb. This surgery, called *Pollicization* is considered as one of the most complex hand surgical procedures.

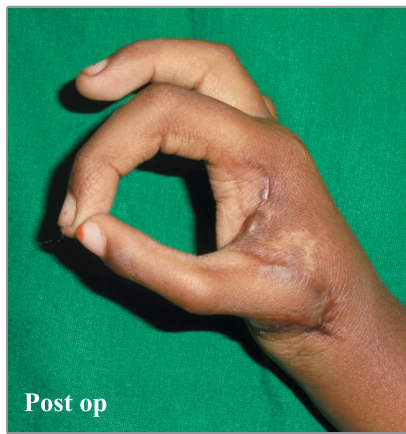


Ganga Hospital is one of the premier institutions in the country performing pollicization on a regular basis. The images shown are those of a 7 year old girl who presented to us with absent thumb. We used the index finger to create the thumb.

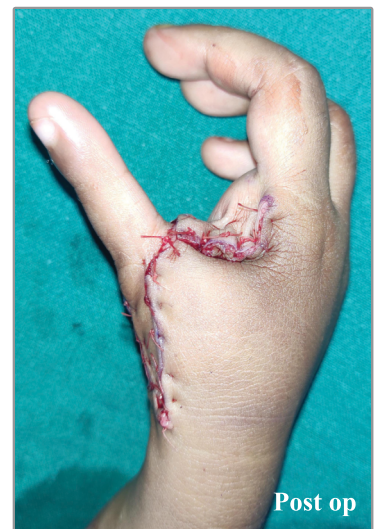


She is able to hold objects after surgery and the movements can be viewed on this link or by scanning this QR code,

https://www.gangahospital.com/absent_thumb

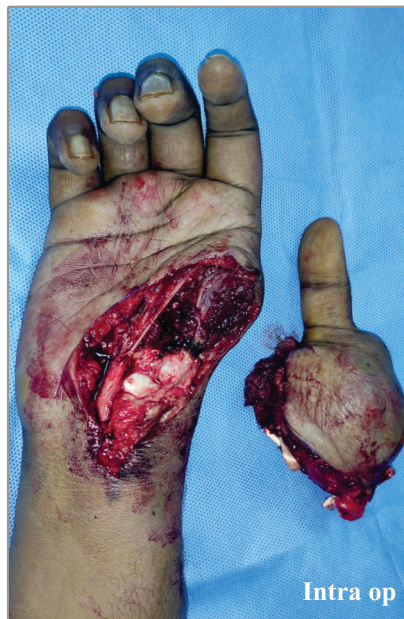


Last month we created a thumb for a 4-year-old child. The procedure can be done as early as a year and a half. It takes a few months for the new thumb to become fully functional. The pictures show the severely underdeveloped thumb of the child, that is hanging by a thin skin bridge. In the absence of an opposable thumb, the child is unable to pinch and pick up the toy. The on table postoperative picture shows the index finger that has been converted to a thumb.



Can we create thumbs for adults using the index finger?

The technique of Pollicization has been refined to create a thumb for children. We have used the same technique in adults who unfortunately lose their thumb due to injury, infection or due to cancer.



Last month we had a patient whose thumb had to be removed due to a form of cancer (synovial sarcoma). To reconstruct the thumb, the index finger was converted into a thumb.

Clinician's Corner

Case of a Broad Thumb



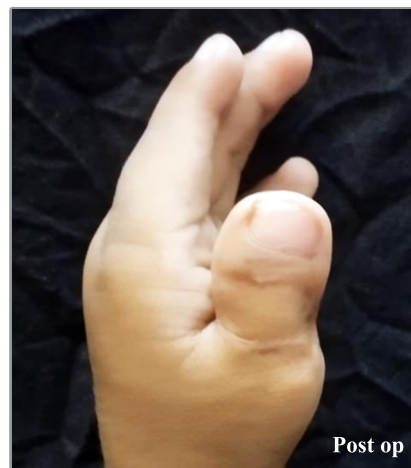
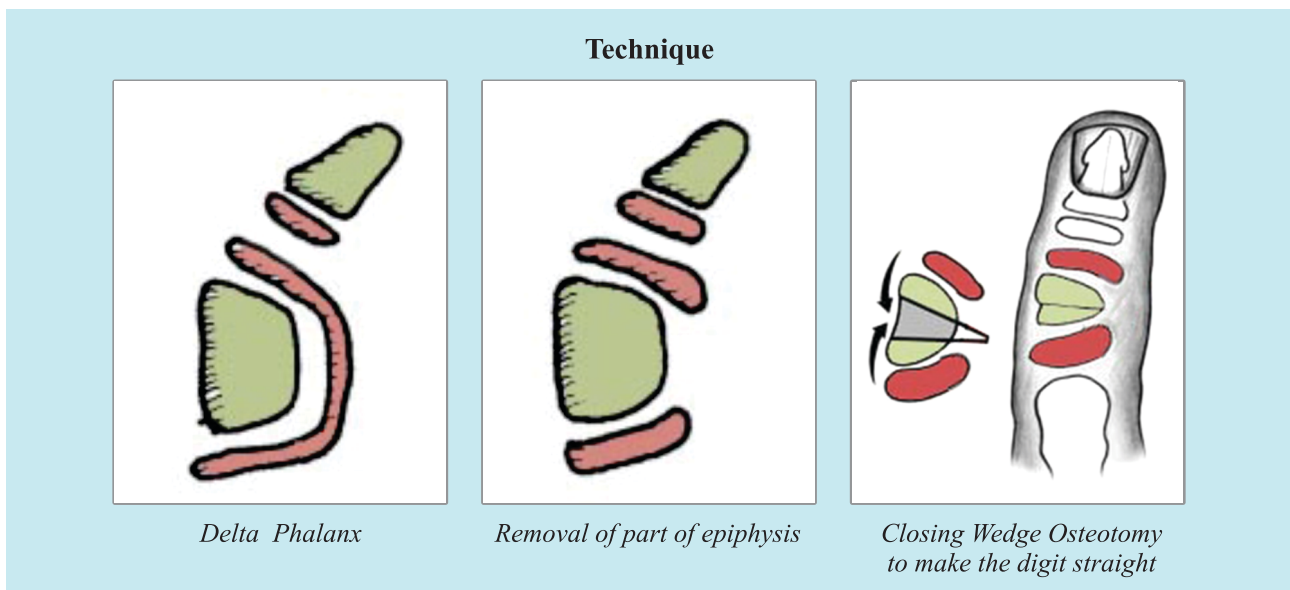
We saw a child with bilateral broad and radially deviated thumbs and great toes. The child had 'unusual' facies and micrognathia. The symptoms put together support a diagnosis of Rubinstein-Taybi Syndrome or

Broad thumb-hallux syndrome. We corrected the radial deviation by excising the epiphysis on the convex side and closing wedge osteotomies for both thumbs. Postoperatively both the thumbs look good.

The syndrome was named after paediatrician Dr Jack Rubinstein and radiologist Dr Hooshang Taybi. Rubinstein Taybi Syndrome occurs in approximately 1:100,000 to 1:125,000 live births.

The radiograph of this child revealed a different type of phalangeal bone which is called a Delta Phalanx. Delta Phalanx is an abnormally shaped bone that is named after the Greek letter Delta (Δ) because it resembles a triangle. This triangular bone has a “C” shaped epiphysis that runs along the shorter side of the phalanx and prevents it from growing longitudinally. This could lead to angulation or no growth. The normal phalanx has got a transverse epiphysis at its base which allows it to have longitudinal growth.

We preferably to do this surgery before they go to school.



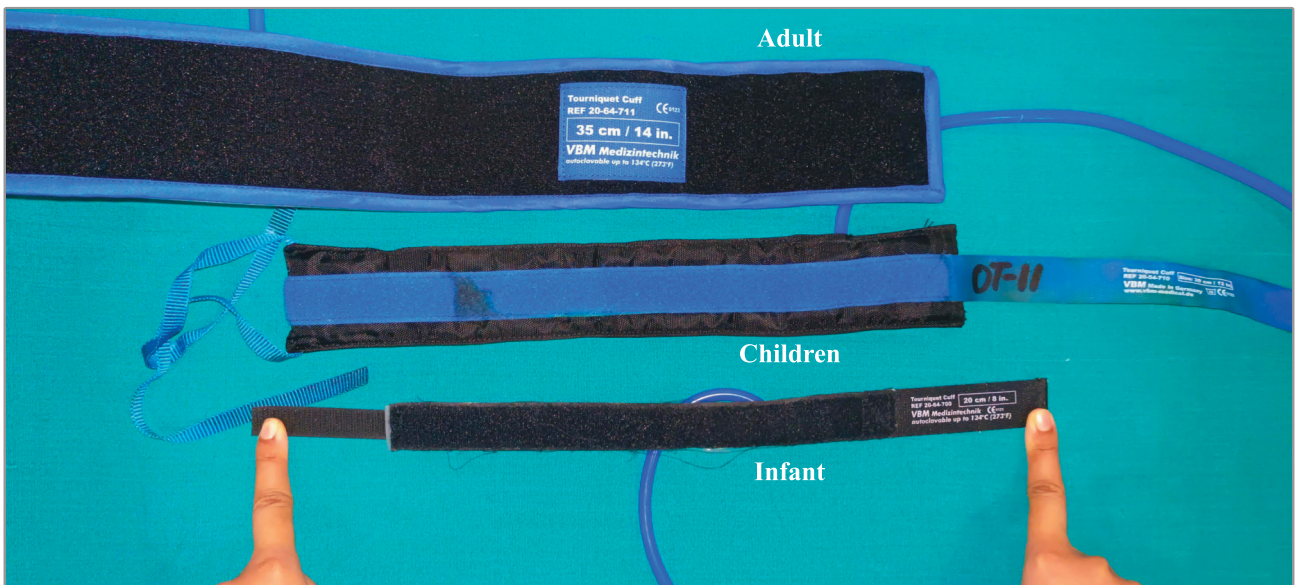
Hand Vignettes

In 1899, Galton first captured ink-on-paper fingerprints of a single child from birth until the age of 4.5 years, manually compared the prints, and concluded that “the print of a child at the age of 2.5 years would serve to identify him ever after.” Since then, ink-on-paper fingerprinting and manual comparison methods have been superseded by digital capture and automatic fingerprint comparison techniques

Tourniquet for Children

Complex reconstructive surgeries in children’s hands are preferably done in a bloodless field so that we can visualize the fine blood vessels and nerves. Special equipments like tourniquet and magnification are important adjuncts to get good outcomes.

We use special smaller tourniquet of appropriate size for children. Normally for adults, the cuff of the upper Limb tourniquet is 35cm x 8cm in size. There are progressively smaller sized tourniquets available in our theatre. The smallest one that we use is of size 20cm x 5cm and is good enough to operate on even newborn babies.



National Hand Surgery Day - 23rd August



The Indian Society for Surgery of the Hand (ISSH) has notified the day 23rd August as the Hand Surgery Day. The date, 23rd August marks the registration day of the Indian Society for Surgery of the Hand in the year 1973. On August 23, 2023, Ganga Hospital celebrated an awareness program.



While seeing our preparations, a girl sent a painting fully drawn by her, as a token of love to the team which operated on her. She is a child with fused fingers and bones and required complex surgical steps to create independent functional fingers (Central Synpolydactyly). She proved the point that congenital hand anomaly is not a limiting factor in excelling in arts & crafts.

World Congenital Hand Symposium

We are proud that Ganga Hospital has been chosen to be the host for the 2026 World Symposium on Congenital Malformations of the Hand and Upper Limb. The once in three years meeting will be held on February 26-28, 2026 at Ganga Hospital.

We are proud to bring the best talent in the world who manage children around the world, with congenital hand differences, to Coimbatore. This will be the first ever time, this meeting will be happening in the developing world.

Stay Connected

To get updates about our services for children with hand disorders, to grab the future issues of the monthly bulletin and to know what the department of Plastic, Hand and Reconstructive Microsurgery and Burns offers scan the code below.

1. Please point your phone camera at the code
2. A link or icon will come up, tap it.
3. It will take you to our web page using your phone's web browser.



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