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## Case Study

### A CASE OF ANKYLOSIS OF PROXIMAL INTERPHALANGEAL JOINT OF RIGHT MIDDLE FINGER

Arun Kumar.S.Bilodi<sup>1\*</sup>, M.R.Gangadhar<sup>2</sup>

<sup>1</sup>Professor of Anatomy, Lincoln University College, MAS Campus, Petaling Jaya, Selangor State, Malaysia.

<sup>2</sup>Professor of Anthropology, Manasagangothri, Mysore University, Karnataka State, Mysore.

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#### ABSTRACT

Symphalangism is an ankylosis of interphalangeal joints. It is a rare congenital disorder affecting interphalangeal joints of fingers and toes. This condition was seen in a female aged 21 years in her right hand since birth. She had difficulty in holding the objects and in carrying out her normal activities by her right hand including writing. Her lower limb joints were normal. She was examined thoroughly and her X-ray showed swan neck deformity of the middle finger of the right hand. Other joints were normal. Her condition was compared and well correlated with available literatures.

#### INTRODUCTION

Symphalangism, it is a very uncommon condition affecting mainly interphalangeal joints known as Symphalangism. It was in 1916, Harvey Cushing was the first person to tell about this autosomal dominant condition<sup>[1]</sup>. Present molecular studies have shown that abnormal genes that are causing this condition are localised on chromosome 17q22. Ankylosis occurs either in the proximal [PIP] or distal [DIP] interphalangeal joints. Among the two interphalangeal joints, the Proximal interphalangeal joint occurs more frequently than the Distal Interphalangeal joint.<sup>[2]</sup> There will be fusion of phalanges giving rise to deformity and coming in the way of performing normal activities. Sometimes it may be associated with many syndromes like Nievergelt Pearlman, Poland, Apert, Hermann and multiple synostoses<sup>[2,3]</sup>. The symphalangism treatment is not successful. The patient requires manipulation and application of various types of arthroplasties to the fused fingers but there was no satisfaction of patient.<sup>[4]</sup>

**Case Report:** A twenty one year old female came to the orthopaedic outpatient Department of Velammal Medical College Teaching Hospital at Anupannadi, Madurai, Tamil Nadu India with history of limitation of movements along with deformity of middle fingers in her right upper limb. There was swelling of joints with painful movements of joint. Skin over the joints were

smooth. There was family history of similar complaints where her mother is said to have similar condition. Both mother and daughter had this deformity since birth. No other anomalies were found. Relevant investigations were done. X-Ray was taken in her right hand which showed bony ankylosis of proximal interphalangeal joint of middle finger. There was narrowing of space within the joint of middle finger. Rest of bones and interphalangeal and metacarpophalangeal joints were normal. With her oral consent, photograph of right hand was taken.

**OBSERVATIONS:** Clinical examinations showed deformity of middle finger in her right hand. There was swelling in middle and distal phalanges in the same fingers, stiffness and limitations of movements. Her left hand was normal with no deformity. X-Ray was taken which showed deformity of above fingers. There was loss of functions of right middle finger. [Loss of flexion and extension moments]. Joint was stiff.

#### DISCUSSION

Symphalangism is a congenital disorder of rare variety where there is fusion of interphalangeal joint. Commonly involved is Proximal Interphalangeal joint but distal interphalangeal joint is rare and sporadic. It is Autosomal dominant of inheritance. There may be occurrence along with

other associated anomalies like spinal cord anomalies, conductive deafness, fusion of Tarsal bones and carpal bones. Clinically, patient will be having stiff finger and crease of skin over the affected joint. Radiologically, there will be features of ankyloses. Joint space is minimum. Occasionally digits may be shorter.

It is deformity of finger where tip finger is flexed towards the palm known as Flexion of Distal Interphalangeal joint [DIP], while the joint near the palm is bent away from the palm known as hyperextension of Proximal Interphalangeal joint [PIP]. It is usually caused by trauma [injury] or inflammatory conditions like Rheumatoid Arthritis.<sup>[5]</sup> Oguz Durmus et al [2014] has reported a case of Ankylosis of interphalangeal joints in twenty old male who had limitation of fingers present since birth. There was no pain but coming in the way of day to day activities. There was similar family history complaints affecting mother, brother and sister. There was absence of movements of third to fifth proximal interphalangeal joints. There was fixation of these joints in the attitude of extension. Distal phalanges were normal. There was no history of arthritis nor nail pathology. Other joints were normal. There was no degenerative changes nor erosion. Biochemical assays and serological markers were normal. The patient refused surgery because there was minimal limitation of movements. He was advised exercise of fingers to improve their movements.<sup>[6]</sup>

Stiff left middle finger has been reported in a female aged 32 years present since birth. On clinical examination, she was found to have normal length of left middle finger. There was absence of crease of skin over the distal interphalangeal joint and the movement was absent. Radiological examination revealed that phalanges were fused in the Distal interphalangeal joint. This patient had no other associated anomalies of spine & Tarsal bones.

**Pathology:** There will be stretching of volar plate that causes hyperextension of the proximal interphalangeal joints. It is associated with damage to attachment of extensor tendons. When the deformity occurs in the thumb, then it is known as Duck Bill Deformity.

**Present Study:** In present study, a case of deformity of the Middle Finger of the right hand was observed in female aged twenty one with limitation of movements of middle finger. There was swelling, limitation and painful movement of proximal interphalangeal joints. There was difficulty in forming the fist due to stiffness. Skin over the joint was smooth and creases were

absent. She was not able to perform fine movements in her right upper limb due to stiffness in her right middle finger which had swan neck deformity. There was no associated birth defect of neither spine nor Tarsal bones.

There was similar history in her family where her mother is said to have similar deformity. No history of systemic diseases like diabetic, hypertension and epilepsy, bad obstetric history, nor drug history in her family. She was good at her studies & intelligent. So it is Genetic Disorder running in the family. Both mother [informant-daughter] and daughter are having same deformity since birth. She gave full oral consent to take photograph of her Right hand in the year 2014.



**Legend-1,** Photograph showing swan neck deformity of the middle finger of the right hand due to ankylosis of *interphalangeal joints involving proximal interphalangeal joint*.

**Take Home Message:** This is a genetic disorder causing permanent non operable deformity causing difficulty in carrying out normal activities especially for holding the object and while writing. Hence for such individual proper counselling has to be given because it has caused mental trauma and cosmetic consciousness, hence for such people proper guidance and mental rehabilitation has to be given. Boost their morale. [in non-operable cases].

## CONCLUSION

This deformity is of paramount genetic importance which has caused swan neck skeletal deformity of right middle fingers of Proximal interphalangeal joints.

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**\*Address for correspondence**

**Dr Arun Kumar.S.Bilodi**

Professor of Anatomy,  
Lincoln University College,  
Petaling Jaya [PJ], Malaysia.  
Email: [drbilodi@yahoo.com](mailto:drbilodi@yahoo.com)