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PERCUTANEOUS RELEASE OF TRIGGER FINGER- EVALUATION OF FUNCTIONAL OUTCOME

Orthopaedics

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ABSTRACT

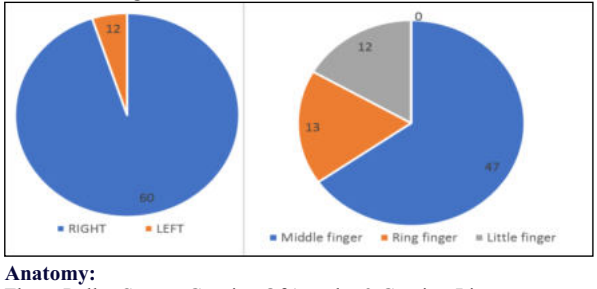
To Evaluate The Outcome Of Trigger Finger Using Percutaneous Release

KEYWORDS

INTRODUCTION:
Trigger Finger Is Also Known Also Stenosing Tenosynovitis. It Is A Tenosynovitis Of The Flexor Sheaths Of The Fingers As A Result Of Repetitive Use. A Narrowing Of Flexor Pulley Sheaths Combined With Hypertrophy And Inflammation Of The Tendon Sheath Interface. It Classically Involves The A1 Pulley Sheath (At The Metacarpal-Phalangeal Joint) Which Is The Proximal Portion Of The Tendon Sheath. Patients Complain Of Locking Of The Digits During Either Flexion Or Extension. Gradually There Is Snapping Sound Of The Flexor Tendon As The Individual Extends And Flexes The Digit. It Commonly Affects The Dominant Hand. It Commonly Affects Ring, Thumb & Middle Fingers. Most Common In Women, & Presenting Age Group Is 5^{th}&6^{th} Decade. Complications Of Surgical Release Include Infection, Digital Nerve Injury, Scar Tenderness, And Joint Contractures. Percutaneous Release Is Safe And Effective Which Can Be Done On Outpatient Basis With Good Results.

Aim: To Evaluate Functional And Clinical Outcome Of Percutaneous Release Of Trigger Finger

MATERIALS & METHODS:
A Study On 72 Cases Done. Study Period - Jan 2018 To June 2021. 85% Cases Were Rheumatoid Positive. 85% Are Females (61females And 11 Males),65% Cases Are Middle Finger. Remaining Are Ring And Index Fingers. Trigger Thumb Cases Are Not Included. Only Trigger Fingers Are Included. Right Sided Were 60 Out Of 72,12 Were Left Sided.47 Cases Were Middle Finger 13 Were Ring Finger And 12 Were Index Finger



Anatomy:
Flexor Pulley System Consists Of Annular & Cruciate Ligaments
A1- Meta Carpo Phalangeal Joints
A2- Proximal Phalanx
A3- Proximal Interphalangeal Joint
A4- Middle Phalanx
A5- Distal Interphalangeal Joint
C1- Located Between A2&A3
C2- Between A3&A4
C3- Between A4&A5

Function:
Annular Pulley Prevents Bow Stringing During Finger Flexion And Cruciate Pulley Make Tendon Sheath Able To Confirm The Position Of Flexion By Allowing Annular Pulley To Approximate Each Other. Converts Linear Translation& Force Into Rotation & Torque At Finger Joints. Facilitates Smooth Gliding Of The Tendons. Synovial Fluid Provides Nutrition To The Tendons.

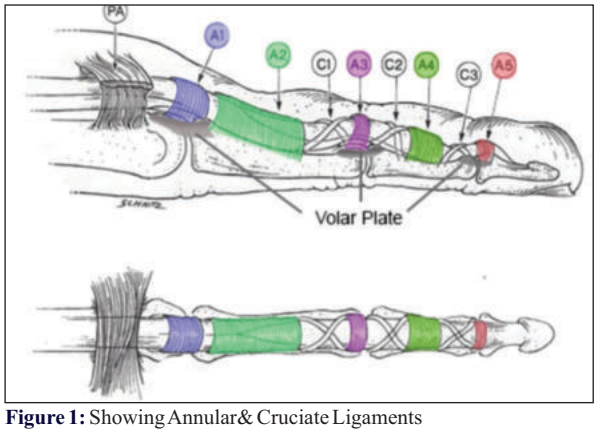


Figure 1: Showing Annular& Cruciate Ligaments

Etiology:
Repetitive Finger Movements And Local Trauma Are Possibilities With Such Stress And Degenerative Force Also Accounting For An Increased Incidence Of Trigger Finger In The Dominant Hand . There Are Reports Linking Trigger Finger To Occupations Requiring Extensive Gripping And Hand Flexion, Such As Use Of Shears Or Hand Held Tools. In Reality The Causes Of Trigger Finger Are Multiple And In Each Individual Often Multifactorial.

Pathophysiology:
On Repeated Trauma Or Over Use The Tenosynovium Gets Inflamed And The Space With In The Tendon Sheath Becomes Narrow & Constricting. Tendon Gliding Through The Sheath Donot Happen Easily, At Times Catching Of Finger In A Flexed Position, During This Catching Phase The Tendon Gets Irritated And Inflamed, On Prolonged Inflammation Results In Hypertrophy Of Tendon & Nodule Formation At The Level Of A1 Pulley

Clinical Presentation:
Pain At The Root Of The Finger, Swelling, Tenderness, Stiffness, Palpable Nodule, Clicking With Flexion And Extension, Catching Or Popping Sensation. When Patient Opens The Clenched Hand, The Affected Finger Remains In Flexion, With Forceful Effort Or Passively Opening With Other Hand It May Extend With A Palpable Click.

On Examination:
A Tender Nodule Can Be Palpated In The Palmar MCP Area

Investigations: ……..????
Blood Investigation Like CBP, Rheumatoid Factor, ESR, CRP, ASO Titres, RBS

X-Ray Of Hand And Ultrasound Of The Involved Finger.

Technique- Percutaneous Release:
Pre Requisites – 16G Or 18G Needle & Local Anaesthetic. Percutaneous Release Can Be Performed In A Clinic Setting. Local Anaesthetic Mixed With Corticosteroid Is Administered And The Palmar Base Of The Affected Finger Is Prepared Sterilely. The Patient Is Asked To Flex The Affected Digit. The Surgeon Then Hyperextends The Finger. This Brings The Flexor Tendon Sheath Directly Under The Skin And Allows The Neurovascular Bundles To Displace To Either Side. An 18-Gauge Needle Or Other Device Is Inserted At The Proximal Aspect Of The A1 Pulley. Care Should Be Taken To Stay Centered Over The Flexor Tendon Sheath To Avoid Neurovascular Structures And To Enter The Skin Perpendicularly With The Bevel Of The Needle Parallel To The Tendon And Then Proceeding With Release Proximally And Distally. The Proximal Edge Of The A-1 Pulley Is Located Near The Distal Horizontal Palmar Crease For The Small, Ring, And Middle Fingers & For The Index Finger It Is Located At The Proximal Horizontal Palmar Crease. The Needle May Be Inserted Into The Tendon. This Is Confirmed By Needle Movement When The Patient Flexes And Extends The Distal Phalanx. The Needle Tip Is Now In The A-1 Pulley. The A-1 Pulley Is Cut By Moving The Needle Forward And Back While Advancing It In Line With The Longitudinal Axis Of The Flexor Tendon Sheath. A Grating Sensation Is Felt Which Indicates The A-1 Pulley Is Being Cut. Once The Surgeon Believes The Pulley Has Been Released Adequately Then The Needle Is Withdrawn And The Patient Is Asked To Flex And Extend The Digit To Show Relief From Triggering.

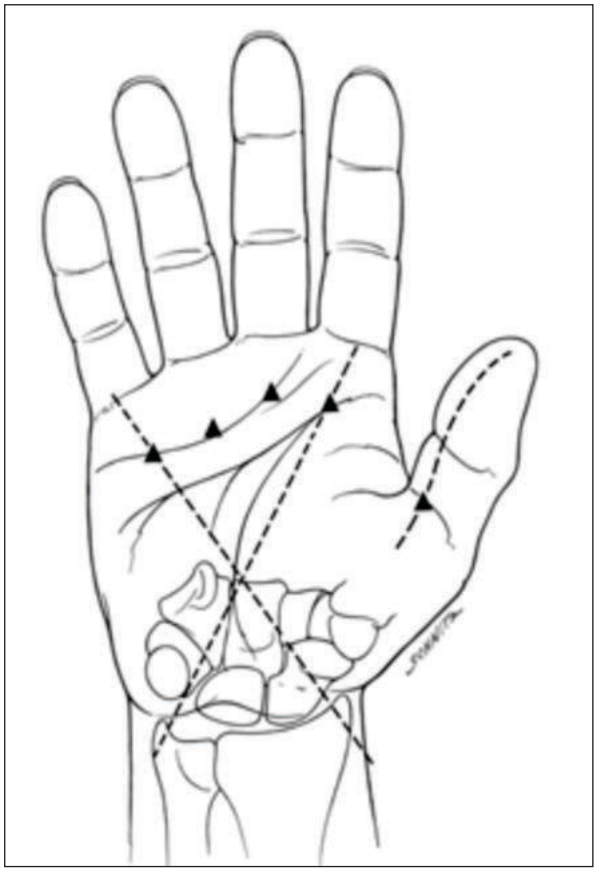
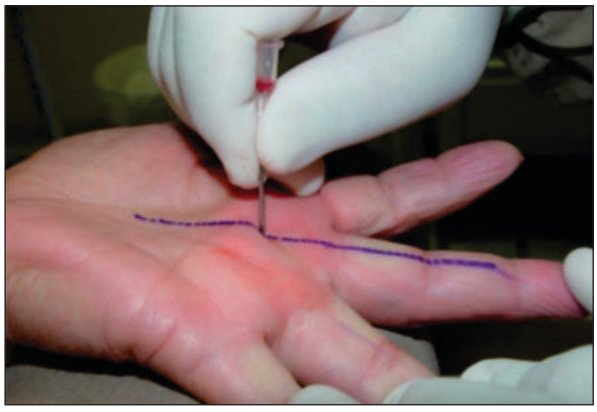


Figure 2: Surface Landmarks Of A1 Pulleys

Use of surface landmarks for percutaneous A-1 pulley release. Index finger: at the proximal palmar crease at a line connecting the radial border of the pisiform and the center of the proximal digital crease of the index finger. Middle finger: at the distal palmar crease in the midaxis of the digit. Ring finger: at the distal palmar crease in the midaxis of the digit. Small finger: at the distal palmar crease at a line connecting the ulnar border of the scaphoid tubercle with the center of the proximal digital crease of the small finger. Thumb: at the proximal digital crease in the midaxis of the thumb



RESULTS:
Results Are Based On Following Criteria
A) Visual Analogue Scale
B) Subjective Evaluation Of Pain, Minimum-0 & Maximum – 10

DISCUSSION:
In Our Study We Have Done Percutaneous Release Of 72 Trigger Fingers Out Which 66 Patients Had Immediate Relief Of Pain & Locking And Returned To Their Daily Activities Soon After The Procedure And Remaining 6 We Had To Do Open Release Of A1 Pulley. Open Surgery Is Performed By Cutting The A1 Pulley Via A Longitudinal Or Transverse Incision. This Technique Has Been Used For A Long Time. The Percutaneous Surgical Release Technique Performed Is A Convenient, Cost-Effective Method With A Low Complication Rate, Is Becoming More Popular Than Open Surgery. Percutaneous Release Is Suggested To Decrease The Complications That Can Be Seen With Open Surgery, Such As Infections, Painful Scar Formation, Bowstringing Of The Flexor Tendons Due To Pulley Injuries, Joint Stiffness, Weakness, And Digital Artery Or Nerve Damage.

CONCLUSION:
Percutaneous Release Is Safe, Cheap & Effective Procedure Done With 16 Or 18 G Needle Under Local Anaesthesia. Average Duration Of Procedure Is 12 Minutes. It Is A Day Care Procedure. Can Be Done In Clinic With Minimal Setup. Immediate Relief In Seconds After The Procedure.

Author's Contributions –
Ethics Approval And Consent To Participate – Institutional Ethics Board Approval Was Obtained For This Analysis.

Consent For Publication – Written Informed Consent Was Obtained From The Patients For Publication Of This Case Analysis And Accompanying Images.

Competing Interests - On Behalf Of All Authors, The Corresponding Author States That There Is No Conflict Of Interest.

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