

全国高等医药院校教材

Textbook of Regional Anatomy

局部解剖学

(英文版)

Chief Editors(主编)

Agu Hashan(阿古·哈山) Zhang Xiaoming(张晓明)



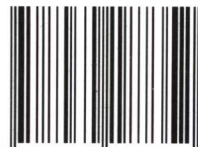
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内 容 简 介

本书由新疆医科大学解剖学教研室教授联合编写,内容包括上肢、下肢、头颈部、胸部、腹部、骨盆和会阴,本教材中英双语、内容新颖、图文并茂,突出“新”、“精”与“临床应用结合”。

本书适合医学院校七、八年制及英语班学生使用,也适合五年制本科学生使用。

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Preface

Textbook of Regional Anatomy is a very short and precise effort for the students who are required to grasp the main areas of the regional anatomy in a very limited time, so this little endeavour is made understanding the need of the students'. The regional anatomy is one of the most important and difficult pre-clinical curriculums. Every year hundreds of foreign students learn and master the morphological structures of the human body after they have accomplished to finish the systematic anatomy in the university.

I penned down the draft of Textbook of Regional Anatomy five years ago. Most important and useful points which are the tough stone for the clinical practice have been mentioned, focused on and emphasized concisely. During the past five years, the students have been benefiting from the draft when they learned regional anatomy. In order to make it crystal clear to the students we revised the draft and added some contents and exercises this time.

Anatomy is a pictorial science, so more observation of the structures tinged with theoretical knowledge brings about better understanding and awful results in the clinic as well as in examination.

We are grateful to those who point out misprints or, more importantly, find the occasional factual error in the textbook although our team have worked hard to make it useful, comprehensive and highly relevant. Any comment and suggestion which are helpful for the next edition would be greatly appreciated.

On behalf of the editorial board, I would like to take this opportunity to express my gratitude to all of my colleagues, friends and other persons who extended their priceless help for the production of this book.

Urumqi, China

Chief Editor, Agu Hashan
Department of Human Anatomy
Xinjiang Medical University
August, 2006

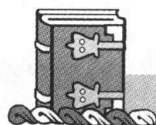
Contents

Preface

Introduction	(1)
Chapter 1 The Upper Limb	(2)
Section 1 Introduction	(2)
Section 2 The Shoulder Region	(3)
Section 3 The Anterior and Posterior Regions of the Arm	(13)
Section 4 The Cubital Region	(20)
Section 5 The Anterior and Posterior Regions of the Forearm	(21)
Section 6 The Hand (Wrist, Palm and Dorsum of Hand)	(26)
Chapter 2 The Lower Limb	(38)
Section 1 Introduction	(38)
Section 2 The Anterior and Medial Regions of the Thigh	(38)
Section 3 The Gluteal Region, the Back of the Thigh	(48)
Section 4 The Leg and the Dorsum of Foot	(54)
Chapter 3 The Head and Neck	(67)
Section 1 The Head	(67)
Section 2 The Face	(75)
Section 3 The Neck	(85)
Chapter 4 The Thorax	(110)
Section 1 Introduction	(110)
Section 2 The Thoracic Wall	(112)
Section 3 The Thoracic Cavity and Its Organs	(118)
Section 4 The Mediastinum	(124)
Chapter 5 The Abdomen	(136)
Section 1 Introduction	(136)
Section 2 The Anterolateral Abdominal Wall	(138)
Section 3 The Peritoneum and Peritoneal Cavity	(147)



Section 4 The Organs Which Are Related with Peritoneal Cavity	
.....	(157)
Section 5 The Retroperitoneal Space (190)
Chapter 6 The Pelvis and Perineum (202)
Section 1 The Pelvis (202)
Section 2 The Perineum (220)



Introduction

I . Definition

Regional human anatomy is the science which deals with the forms , positions and relationship of the structures of the human body in a given region.

II . The Purpose of learning Regional Anatomy

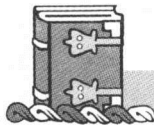
To understand thoroughly the morphological structures of the body just based on the systematic anatomy and to make the essential foundation of regional anatomy for the other pre-clinical and clinical curriculums.

III. The Method of Studying Regional Anatomy

The students must make a good observation and concerntrate on the instructions and explanations of the teachers during class time. They should be familiar with the structures of a given region by touching the cadavers or specimens and try to nestle the anatomical knowledge with that of corresponding clinical skills.

IV. The Main Areas of Regional Anatomy

According to the teaching outline , the students must pay close attention to the layer of the given portions , the relation of organs and structures and normal anatomical variations in term of the clinical practice and have to understand their clinical significance accordingly.



Chapter 1 The Upper Limb

Section 1 Introduction

In response to the demand for flexibility, the upper girdle, contrary to the lower ones, is connected with the axial skeleton through the clavicle by a movable joint, and suspended by muscles in order to allow mobility. The long bones of upper limb are more slender and lighter than that of the lower limb. The capsules of joints are loose and lack of strong ligaments. There are approximately 58 muscles involved directly with movements of the upper limb, and most of them pass across two or more joints.

I. The Boundaries and Portions of Upper Limb

1. Boundary

The upper limb is connected with neck, thorax and dorsal regions with the help of shoulder and axillary regions.

(I) **The boundary of upper limb and cervical region:** The upper limb is separated from cervical region by a linking line which passes through the lateral 1/3 of upper margin of clavicle, and acromion to the spinous process of 7th cervical vertebra.

(II) **The boundary of upper limb between thoracic and dorsal regions:** The upper limb is separated from thorax and dorsal region by a linking line which arises from anterior and posterior margin of the upper portion of deltoid and extends to the middle point of lower margins of anterior and posterior wall of axillary fossa.

2. The Portions

The upper limb is divided into following five portions:

- i. The Shoulder Region.
- ii. The Arm (or brachium).
- iii. The Cubital Region (or elbow).
- iv. The Forearm (or antebrachium).
- v. The Hand.

The shoulder region and the hand can be subdivided into three portions respectively, and the other parts can be divided into two regions respectively.

Section 2 The Shoulder Region

The shoulder region may be divided into three regions, the axillary, deltoid and scapular.

I. The Axillary Region

1. Position

It is located under the shoulder joint, between upper part of arm and the lateral thoracic wall (Fig. 1-1).

2. Definition of Axillary Fossa

The skin under the shoulder joint is convex upwards, termed axillary fossa or armpit. Deep to armpit there is a pyramidal space, called the axillary cavity, which acts as a passage for the vessels and nerves passing from the neck and chest to the upper limb.

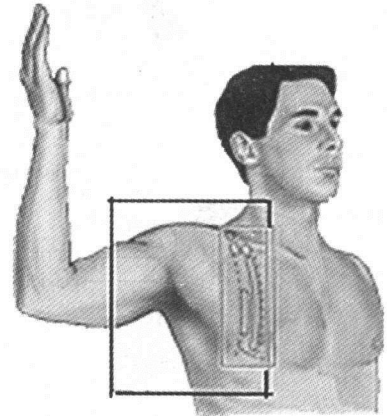


Fig. 1-1 Position of axillary fossa

3. The Boundaries of Axillary Fossa (Fig. 1-2)

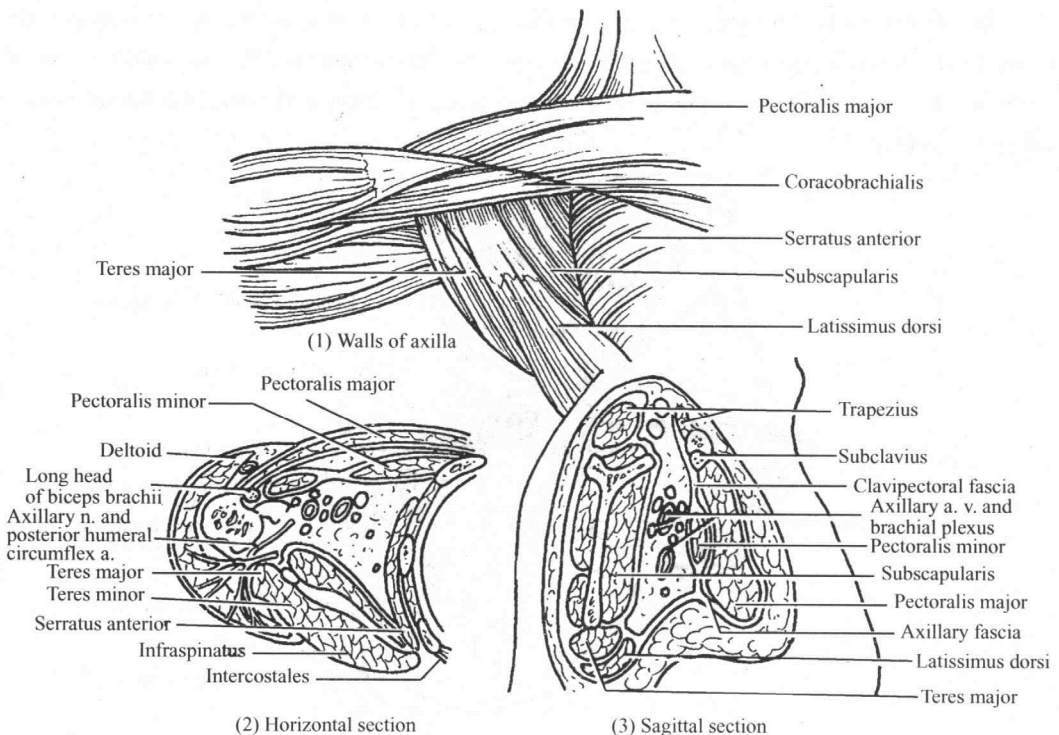


Fig. 1-2 The boundaries of axilla

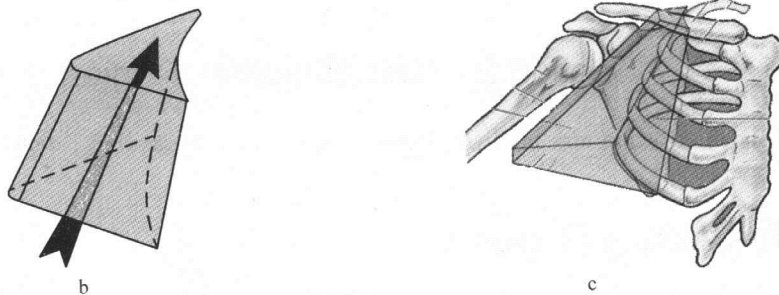


Fig. 1-2 The boundaries of axilla (Continued)

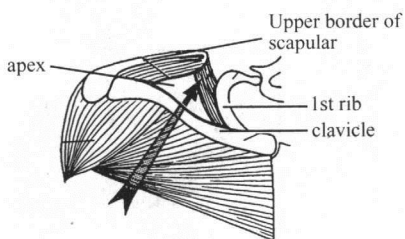


Fig. 1-3 Apex of axillary fossa

The axillary fossa has one apex, one base and four walls.

(I) **Apex:** It is bounded by the middle third of clavicle, the lateral border of first rib and upper border of scapula (Fig. 1-3).

(II) **Base:** It is formed by the skin, the superficial fascia and the axillary fascia.

(III) Four Walls

i . **Anterior wall:** It is formed by the pectoralis major and minor, the subclavius and the clavipectoral fascia.

The Clavipectoral Fascia: It is a strong fibrous sheet posterior to the pectoralis major. It occupies the interval between the pectoralis minor, the subclavius and the coracoid process of scapula. It is pierced by the cephalic vein, thoracoacromial artery and vein, and lateral pectoral nerve (Fig. 1-4).

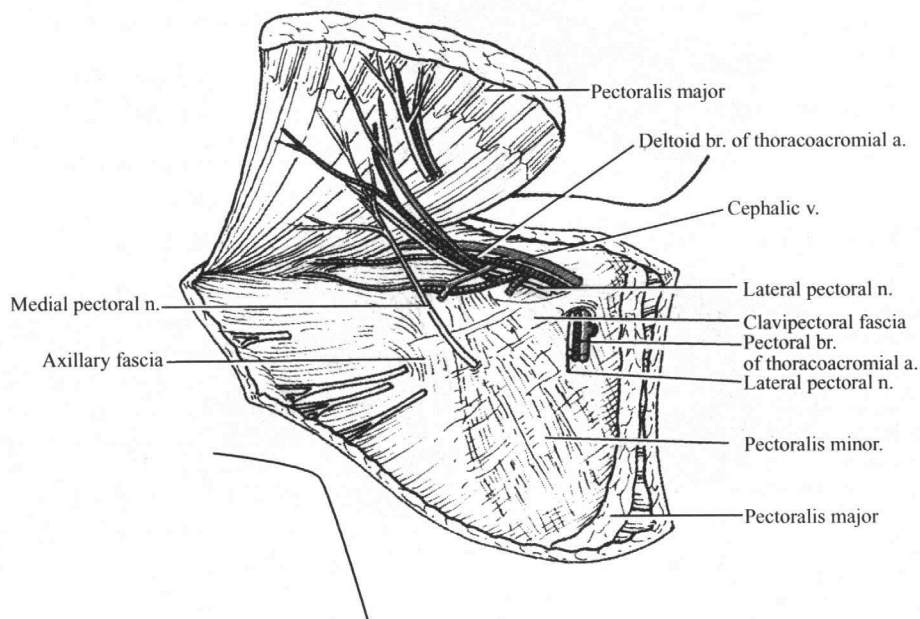


Fig. 1-4 The clavipectoral fascia

ii. The Lateral wall: It is formed by the intertubercular sulcus of humerus, the two heads of biceps brachii and the coracobrachialis.

iii. The Medial wall: It is formed by the upper part of serratus anterior, the first four ribs with their corresponding intercostal muscles which deep to the serratus anterior.

The lateral thoracic vessels and the long thoracic nerve are descending along the middle axillary line and anterior, posterior to the middle axillary line respectively and they are surrounded by the pectoral lymph nodes.

iv. The Posterior wall: It is formed by the subscapularis, the teres major, the latissimus dorsi and the scapula. The posterior wall includes two spaces, the triangular space and quadrangular space (Fig. 1-5).

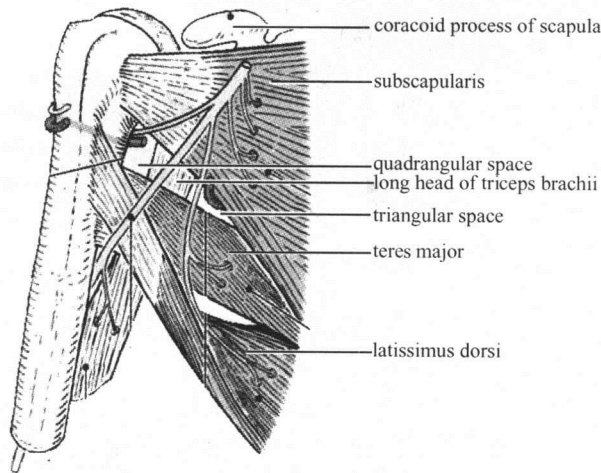


Fig. 1-5 Posterior wall of axilla

(i) The Triangular Space

i) Formation: It is bounded by three borders as follows.

- ① Upper Border: It is formed by the inferior borders of teres minor and subscapularis.
- ② Lower Border: It is formed by the superior border of teres major.
- ③ Lateral Border: It is formed by the long head of triceps brachii.

ii) The structures passing through the space: These are the circumflex scapular vessels.

(ii) Quadrangular Space

i) Formation: It is bounded by the following 4 borders.

- ① Upper Border: It is formed by the inferior borders of teres minor and subscapularis.
- ② Lower Border: It is formed by the superior border of teres major.
- ③ Medial Border: It is formed by the long head of triceps brachii.
- ④ Lateral Border: It is formed by the surgical neck of the humerus.

ii) The structures passing through the quadrangular space: These are the axillary nerve and posterior humeral circumflex vessels.

4. The contents of the axillary fossa

The axillary fossa contains the infraclavicular part of the brachial plexus and its branches, the axillary artery and its branches, the axillary vein and its tributaries, the axillary lymph nodes and loose areolar tissue (Fig. 1-6).

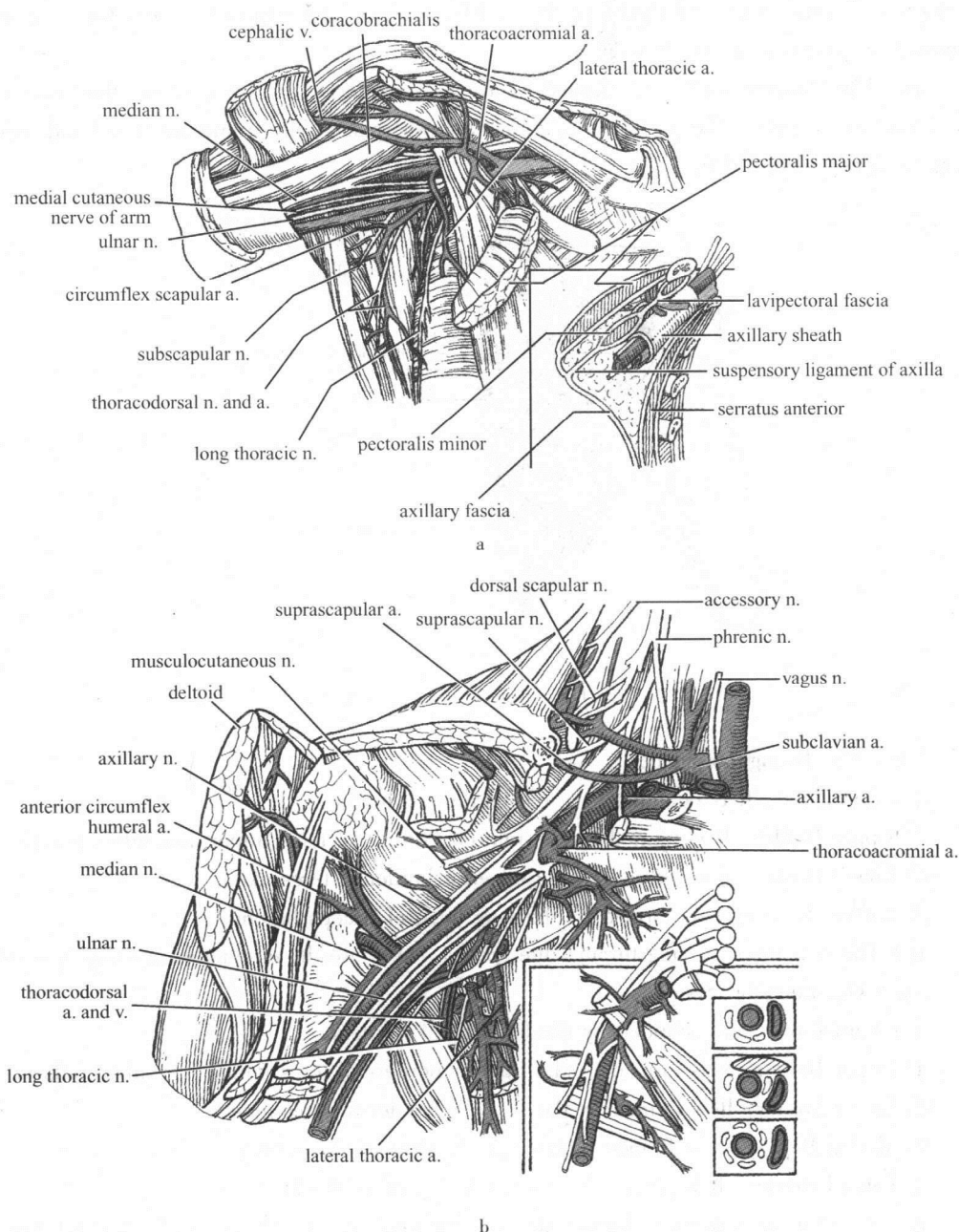


Fig. 1-6 Contents of axilla

(I) **The infraclavicular part of the brachial plexus:** It has the three cords (lateral, medial and posterior) with their branches of the brachial plexus (Fig. 1-6 , Fig. 1-7).

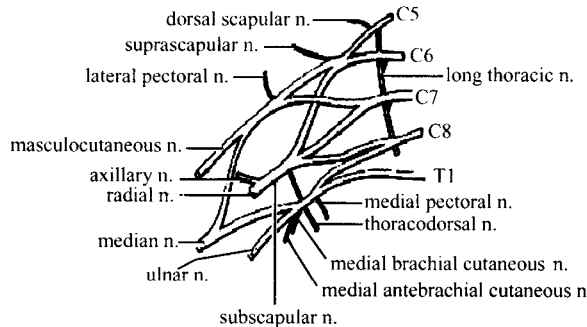


Fig. 1-7 Brachial plexus

i . Position: At first the three cords are located in the posterolateral side of the first part of the axillary artery. Then the three cords are lateral, posterior and medial to the second part of the axillary artery respectively. Three cords give off the branches around third part of axillary artery.

ii . The formation of three cords

(i) Posterior Cord: It is formed by the union of three posterior divisions of three trunks of brachial plexus.

(ii) Lateral Cord: It is formed by the union of anterior divisions of upper and middle trunks of brachial plexus.

(iii) Medial Cord: It is formed by the anterior division of the lower trunk of brachial plexus.

iii. The branches which arise from three cords of brachial plexus.

(i) The branches arise from the infraclavicular part of brachial plexus:

i) Dorsal scapular nerve: It innervates the rhomboideus.

ii) Long thoracic nerve: It innervates the serratus anterior.

iii) Suprascapular nerve: It innervates the supraspinatus and infraspinatus.

(ii) The branches arise from infraclavicular part of brachial plexus.

i) The branches arise from lateral cord of brachial plexus.

① The lateral pectoral nerve: It supplies the pectoralis major and minor.

② The musculocutaneous nerve: It innervates the anterior muscular group of the arm and distributes to the skin of lateral side of the forearm.

③ The lateral head of median nerve: See forearm and hand.

ii) The branches arise from medial cord of brachial plexus.

① The medial head of median nerve: See forearm and hand.

② The ulnar nerve: See forearm and hand.

③ The medial antebrachial cutaneous nerve: It distributes to the skin of medial side of the



forearm.

④ The medial brachial cutaneous nerve: It distributes to the skin of medial side of the arm.

⑤ The medial pectoral nerve: It supplies the pectoralis major and minor.

iii) The branches arise from the posterior cord of brachial plexus.

① The axillary nerve: It passes through the quadrangular space together with the posterior humeral circumflex vessels and supplies the deltoid and skin of deltoid region.

② The radial nerve: See forearm and hand.

③ The thoracodorsal nerve: It innervates the latissimus dorsi.

④ The subscapular nerve: It innervates the subscapularis and teres major.

• (II) **The axillary artery:** It is the direct continuation of the subclavian artery and divided into three parts by the pectoralis minor (Fig. 1-6 , Fig. 1-8).

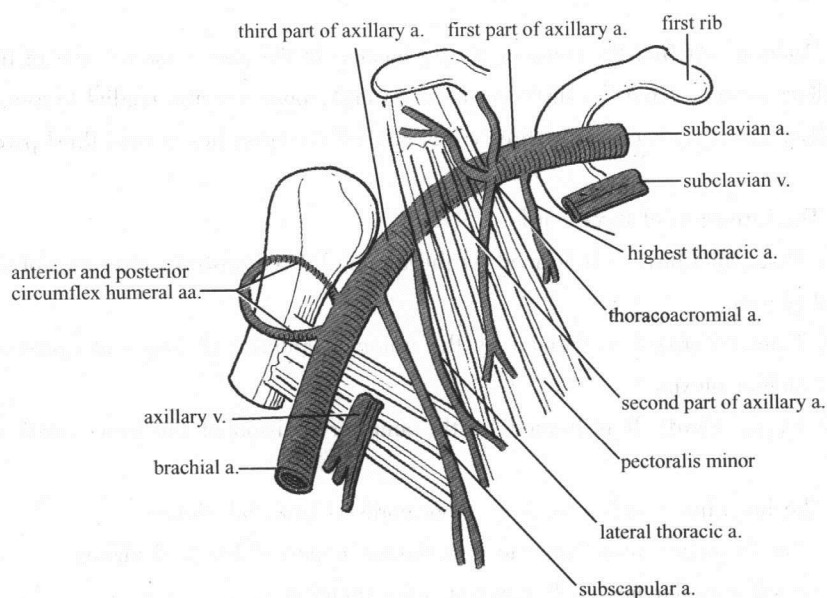


Fig. 1-8 The parts and branches of axillary artery

i . The first part

(i) Position: It arises from the lateral end of subclavian artery at the lateral border of first rib to the superior border of pectoralis minor.

(ii) The relations: The first part makes the following relations with other surrounding structures.

i) The anterior side: The skin, superficial fascia, the pectoralis major and its fascia, the subclavius and the clavipectoral fascia with the structures which pierce it.

ii) The posterior side: The long thoracic nerve, the medial cord of the brachial plexus, the serratus anterior and the first intercostal space.

iii) The lateral side: The posterior and lateral cords of brachial plexus.

iv) The medial side: The apical lymph nodes, axillary vein and the superior thoracic vessels.

(iii) The Branches: The first part of axillary artery gives off following two branches.

i) The superior thoracic artery.

ii) The thoracoacromial artery.

ii. The second part

(i) Position: It is located posterior to the pectoralis minor.

(ii) The relations: The second part is close to the following structures in its different aspects.

i) The anterior side: The skin, superficial fascia, pectoralis major and minor and their fascia.

ii) The posterior side: The posterior cord of brachial plexus and the subscapularis.

iii) The lateral side: The lateral cord of brachial plexus.

iv) The medial side: The medial cord of brachial plexus and the axillary vein.

(iii) Branches: The lateral thoracic artery arises from this part.

iii. The third part

(i) Position: It is the part which arises from the lateral end of second part at the inferior border of pectoralis minor to the inferior border of teres major.

(ii) The relations: The third part makes the following relations with other surrounding structures.

i) The Anterior side: The pectoralis major, medial head of median nerve and anterior humeral circumflex vessels.

ii) The Posterior side: The radial nerve, the axillary nerve, the posterior humeral circumflex vessels, the latissimus dorsi and the tendon of teres major.

iii) The Lateral side: The lateral head of median nerve, the median nerve, the musculospiral nerve, the short head of biceps brachii and coracobrachialis.

iv) The Medial side: The ulnar nerve, medial antebrachial cutaneous nerve and the axillary vein.

(iii) Branches: The third part gives off following branches.

i) The subscapular artery: It is divided into following two branches.

① The circumflex scapular artery.

② The thoracodorsal artery.

ii) The posterior humeral circumflex artery.

iii) The anterior humeral circumflex artery.

(III) **The axillary vein:** It is medial to the axillary artery. Between axillary vein and artery there have the median cord of brachial plexus, the medial antebrachial cutaneous nerve and the ulnar nerve. The medial brachial cutaneous nerve is medial to the axillary vein.

(IV) **The axillary lymph nodes:** According to the location and drainage the axillary lymph nodes are divided into five groups (Fig. 1-9).