



中国科学院教材建设专家委员会规划教材
全国高等医药院校规划教材

NOTES OF REGIONAL ANATOMY

局部解剖学笔记

(英文版)

Chief Editors Fu Yuanshan(付元山) Yu Shengbo(于胜波)



科学出版社

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内 容 简 介

留学生教育是教育国际化的先锋。大连医科大学率先开展了大规模的医学留学生本科教育,在教学内容和教学方法上进行了积极探索。本书是大连医科大学联合川北医学院、四川医科大学和扬州大学等院校多位致力于留学生教学多年的专家、教授共同编写而成,适用于医学留学生本科教育、英文班医学本科教育等。全书内容编排充分考虑了留学生授课实践,分为16节。每节均包括学习重点、解剖要点、主要内容、案例、单项与多项选择等课后练习6部分。能够保障任课教师教学计划高效实施,便于学生抓住学习纲要,明晰解剖操作要点,学习效果自测,更有利于学生课前预习和课堂解剖操作。

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Preface

The major purpose of this dissecting manual is to help medical students grasp the key points of Regional Anatomy. There are 16 sections in the manual. Every section is divided into six parts. The first part lists the key points. The second part, essential dissection procedures, tells us the main dissecting line. The third part provides us with the summary of corresponding contents in the textbook. And the fourth part, case analysis, will open a small window to see far away. The fifth and sixth parts provide choice questions for reviewing.

No one can deny importance of dissection. Through the body dissection, we personally opened the mysterious world of human body. Only by dissecting we can really get the knowledge of body layers and structure relationship. Only by dissecting we can study the usage of surgical instrument. Also by dissecting we can learn how to cooperate with other group members.

Every part of the cadaver will be a challenging maze waiting to explore. If you finish the body dissection in the course of Regional Anatomy, normally we no longer have a legitimate opportunity to dissect the human body. Just imagine when you become “big” doctors, the target under your scalpel is a fresh life. So enough preparation before clinical operation will be necessary. Just do it from now. The first step before dissection is to read the corresponding part of the textbook of Regional Anatomy or else you can't observe structures as more as possible. One suggestion is that an atlas of human anatomy will be the best assistant from beginning to end.

Are you ready?

Dalian Medical University
Fu Yuanshan, Yu Shengbo
July, 2015

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Introduction

1. Definition

The regional anatomy deals with the forms, positions and relationships of the structures of several systems located in a particular region of the body.

2. Parts of the body(Table 1)

Table 1 Parts of the body

Parts of body	Division	Subdivision
Head	Cranium	
	Face	
Neck	Anterior region(cervix)	Anterior region; Sternocleidomastoid region;
	Posterior region(nucha)	Lateral region
Trunk	Thorax	Thoracic wall; Thoracic cavity
	Abdomen	Abdominal wall; Abdominal cavity
	Pelvis	Pelvic wall; Pelvic cavity
	Perineum	Urogenital region; Anal region
	Vertebral region	
Upper limb	Shoulder	Scapular region; Deltoid region; Axillary region
	Arm	Anterior region; Posterior region
	Elbow	Cubital fossa
	Forearm	Anterior region; Posterior region
	Hand	Wrist; Palm; Dorsum of hand; Fingers
Lower limb	Gluteal region	
	Thigh	Anterior region; Posterior region; Medial region
	Knee	Popliteal fossa
	Leg	Anterior region; Posterior region; Lateral region
	Foot	Dorsum; Sole

3. The basic structures of the human body

The human body is essentially constructed by the layer model. From outside inwards, the structures met with a dissector are as follows.

3.1 The skin.

It covers the body surface and is composed of an epithelial layer of ectodermal origin, the epidermis, and a layer of connective tissue of mesodermal origin, the dermis. The skin is the largest organ of the body. Its thickness varies greatly. As a rule, the skin is thinner on the ventral(flectional)side than on the dorsal(extensional)side. On the contrary, it is thicker on the palm than on the dorsum of the hand, thicker on the sole than on the dorsum of the foot(Figure 1).

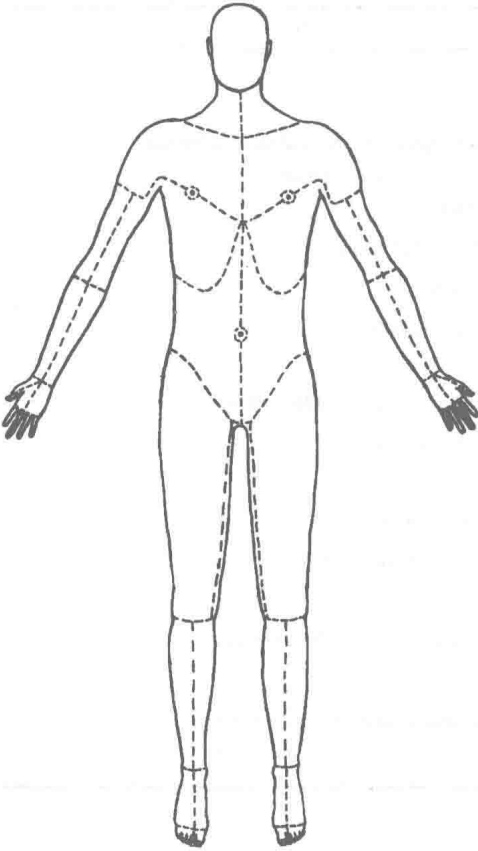
3.2 The superficial fascia.

It is a fibrous, fatty covering that underlies the skin, so it is also called the subcutaneous tissue or subcutaneous fat. The superficial arteries, veins, lymphatic vessels, superficial lymph nodes and cutaneous nerves are situated in this layer. There are also a number of superficial

lymph nodes in the head, neck, axilla, and inguinal.

3.3 The deep fascia(proper fascia).

It lies under the cover of the superficial fascia. It is thin but dense and strong. In some regions of the body, it forms the intermuscular septa, neurovascular sheath, and the retinaculum. The deep fascia, intermuscular septa and bone with the periosteum form the osseo fascial compartment, which has an important clinical significance in the spread of infection in certain conditions.



*Figure 1 Skin incisions of the whole body
(anterior surface)*

3.4 The muscles.

Most of the muscles seen during dissection are the skeletal muscles. Each muscle has its own blood supply which comes from the adjacent artery and has at least one nerve that contains the motor, sensory and autonomic fibers. The site of the nerve and artery entering the muscle is called the neurovascular hilus, it is important in the pediculate muscle grafting.

3.5 The innermost layer.

The innermost layer of the limbs is the bones and joints, while in the dissection of the trunk, the innermost layer are the organs or viscera of the thorax, abdomen and pelvis.

3.6 The following three kinds of structures may be found anywhere beneath the skin.

3.6.1 The blood vessels.

The arteries are thick-walled elastic tubes. They were injected with coloured material beforehand, which makes them more apparent and easily to be recognized.

The veins are wider and thinner than their accompanying arteries. They usually retain the blood clots in their lumen, and are therefore bluish or

purple in color. In the superficial fascia, they do not accompany the arteries and are more numerous. All the middle sized deep arteries have two accompanying veins, one on each side.

3.6.2 The lymphatic vessels and lymph nodes.

The lymphatic vessels are very thin and slender, so that, they are not detected during dissection, except for the main lymphatic trunks or ducts. The lymph nodes are small round or oval shaped bodies alongside the greater blood vessels.

3.6.3 The nerves.

They are white cords and branched like the arteries. With the exception of cutaneous nerves, they usually travel together with the blood vessels in a neurovascular bundle. The

autonomic nerves in the thoracic or abdominal cavities are often running along the arteries and form a plexus around them to innervate the organs where the artery supplies.

4. The cadaver preservation and the dissection laboratory

4.1 The cadaver preservation.

No one can deny that the only way really to learn human anatomy is by dissection of the cadaver. The following methods for preservation of dissected specimens have been found to be successful and should be closely followed.

4.1.1 Never expose more of the cadaver than necessary for study.

4.1.2 Whenever possible, preserve the skin and the superficial fascia, as these are ideal coverings for the part under dissection.

4.1.3 At the end of the cadaver operation classes, make sure that all parts of the cadaver are properly wrapped in wet cloth and covered by a plastic sheet.

4.2 The dissection laboratory.

4.2.1 The student should keep the dissection laboratory clean and tidy. The dissection tables should be cleaned at the end of every class. All scraps of anatomical material should be placed in the provided container.

4.2.2 It is advisable to wear long white coat to protect your clothes.

4.2.3 As members of a dissecting group, you have a chance to be a dissector, reader or helper during dissection. Normally one of you should dissect, and one member should read aloud the dissecting procedures, while the third member help the dissector to identify structures met during dissection.

4.2.4 Although this notebook provides essential dissecting procedures, you should preview related contents as careful as possible. Figure 1 shows you the main incisions on the anterior surface of the whole body.

4.2.5 In the first class, the instructors will show you how to use the dissecting instruments and this book. Some of the incisions are shown in Figure 1. Detailed description on incision will be listed in each section.

(Liu Yanna, Zhang Jianfei, Yu Shengbo)

Section 1 Anterior Region of Thigh

1. Key points

1.1 Course and main tributaries of the great saphenous vein. Positions, afferents and efferents of the superficial inguinal lymph nodes. The quadriceps femoris and its innervation.

1.2 Course and branches of the femoral artery.

1.3 Boundaries and contents of the lacuna musculorum and the lacuna vasorum. Formation, compartments and contents of the femoral sheath. Contents and clinical significance of the femoral canal. Boundaries of the femoral ring. Boundaries and contents of the femoral triangle.

2. Essential dissection procedures

2.1 Make 3 incisions(Figure 2).

2.1.1 The cadaver is placed in the supine position. Make an oblique incision from the anterior superior iliac spine to the pubic tubercle along the inguinal groove.

2.1.2 Continue to cut the skin skirting the external genital organs downwards and posteriorly then make a vertical incision along the medial side of the thigh to the level of the tibial tuberosity.

2.1.3 Start at the lower end of the above incision, make a transverse incision around the upper part to the leg.

2.2 Reflect the skin flap laterally to hinge on the lateral border of the thigh.

2.3 Dissect the superficial fascia.

2.3.1 Look for the great saphenous vein and its tributaries. Cut the fatty tissue vertically on the anteromedial surface of the thigh to expose the great saphenous vein. Trace the vein downwards to the medial side of the knee and upwards to the point where it turns to deep sharply through the deep fascia to enter the femoral vein. Identify the tributaries of the great saphenous vein near its upper end, namely, the superficial iliac circumflex vein, the superficial epigastric vein, the external pudendal vein, the superficial medial femoral vein and the superficial lateral femoral vein. The former three veins are accompanied by arteries of the same name which arise from the femoral artery.

2.3.2 Observe the superficial inguinal lymph nodes. They can be divided into the superior group located along the inguinal groove and the inferior group located along the upper end of the great saphenous vein.

2.3.3 Dissect the cutaneous nerves. Find one or two anterior cutaneous branches of the femoral nerve, namely the intermediate cutaneous nerve, between the upper and middle thirds in the front of the thigh. Find out the lateral femoral cutaneous nerve along the anterolateral thigh.

2.4 Examine the deep fascia and the saphenous hiatus.

2.4.1 Remove the remains of the superficial fascia to expose the deep fascia(fascia lata). The fascia lata is strong on the lateral side to form the iliotibial tract.



Figure 2
Skin
incisions of
the lower
limb
(anterior
surface)

2.4.2 Dissect the saphenous hiatus. It lies 3.5 cm below and lateral to the pubic tubercle. Lift the upper end of the great saphenous vein and define the lower, lateral and upper margins of the opening. The opening is covered with a layer of cribriform fascia. Clear away this fascia, and do carefully disentangling the vessels that pierce it, and avoiding injury to the structures behind it. The medial margin of the opening is usually inconspicuous.

2.4.3 The lateral portion of the fascia lata extends from the anterior portion of the iliac crest to the lateral condyle of the tibia to form the iliotibial tract which is thick and strong. Make a longitudinal incision through the fascia lata from the anterior superior iliac spine to the lateral border of the patella. Insert fingers backward between the vastus lateralis and the iliotibial tract to identify the lateral femoral intermuscular septum. Clean the fascia lata except for the iliotibial tract.

2.5 Dissect the femoral triangle.

2.5.1 Identify the boundaries of the femoral triangle. It bounded by the medial border of the sartorius at lateral side, the medial border of the adductor longus at medial side, and the inguinal ligament at superior side.

2.5.2 Make a vertical incision above the drainage point of the great saphenous vein to open the anterior wall of femoral sheath. The space inside of the femoral sheath is divided into 3 compartments by 2 fibrous septa to contain the femoral artery, the femoral vein and the medial one forming the femoral canal. Try to find a lymph node, the deep inguinal lymph node, in the femoral canal. Remove the lymph node and define the boundaries of the femoral ring with your little fingertip.

2.5.3 Clean and expose the branches of the femoral artery. 2-5cm below the inguinal ligament, the femoral artery gives off the deep femoral artery. And the deep femoral artery gives off the medial and lateral femoral circumflex arteries and 3-4 perforating arteries.

2.5.4 Clean the femoral vein. Preserve the proximal part of the great saphenous vein and the deep femoral vein which enter the femoral vein. Expose and remove three or four deep inguinal lymph nodes which lie along the medial side of the femoral vein.

2.5.5 Identify the femoral nerve and its branches. Carefully incise the fascia covering the iliopsoas muscle to find the femoral nerve. Clean and tidy its branches to the pectineus, the sartorius, the quadriceps femoris and the anterior cutaneous branches. The longest branch of the femoral nerve is the saphenous nerve which passes downwards along the lateral side of the femoral artery into the adductor canal.

2.5.6 Observe the floor of the femoral triangle. Clean out connective tissue and preserve the femoral nerve and vessels. Tidy and identify the muscles on the floor of the femoral triangle. They are arranged from the medial to lateral as the adductor longus, the pectineus and the iliopsoas.

3. Main contents

3.1 The skin.

The skin of the medial side of the thigh is thin and rich in sebaceous glands. The skin of the lateral side is thick.

3.2 The structures in the superficial fascia.

In the front of the thigh, the superficial fascia consists of the superficial fatty layer and the deep membranous layer. The former is continuous with the Camper's fascia. The deep

membranous layer is continuous with the Scarpa's fascia of the abdomen and is fused to the fascia lata of the thigh a finger's breadth below the inguinal ligament, more medially it is attached along an oblique line from the pubic tubercle to the pubic arch, where it is continuous with the corresponding the Colles' fascia in the perineum. If the male urethra ruptures into the superficial space between the Colles' fascia and the perineal membrane, the urine may escape upwards into the anterior abdominal wall but not pass into the thigh.

3.2.1 The great saphenous vein.

Course: Begins on the medial side of the dorsum of foot, runs anterior to the medial malleolus and upwards along medial surface of the leg, ascends continuously on the posteromedial surface of the knee and inclines anteriorly through the thigh to enter the femoral vein through the saphenous hiatus.

Five main tributaries: The superficial epigastric vein, the superficial iliac circumflex vein, the external pudendal vein, the superficial medial femoral vein, the superficial lateral femoral vein.

3.2.2 The main cutaneous nerves.

The skin of the anterior region of the thigh is supplied by the lateral femoral cutaneous nerve, the anterior cutaneous branches of the femoral nerve, etc.

3.2.3 The superficial inguinal lymph nodes.

Position: They are arranged in the shape of "T" and subdivided into two groups. The upper nodes are just distal to the inguinal ligament; The lower nodes are along both sides of the upper part of the great saphenous vein.

Afferents: The upper nodes receive lymph from the skin and superficial tissue of abdominal wall below the level of the umbilicus, the buttock, the external genital organs, the perineum and the lower part of the anal canal; The lower nodes receive lymph from the superficial structures of the lower limb excluding the lateral part of the foot and leg.

Efferent: The efferent vessels of the superficial lymph nodes enter the deep inguinal lymph nodes along the femoral vessels and the external iliac lymph nodes along the external iliac vessels in the abdomen.

3.3 The fascia lata.

The structures formed by fascia lata: the iliotibialtract, the saphenous hiatus, the osseo fascial septa which form medial/lateral/posterior intermuscular septa in the thigh.

3.4 The muscles, vessels and nerves.

3.4.1 The anterior group of muscles of the thigh.

There are the quadriceps femoris and the sartorius in the anterior group. They are supplied by the femoral nerve. The quadriceps femoris consists of the rectus femoris, vastus lateralis, vastus medialis and vastus intermedius.

3.4.2 The femoral artery.

The external iliac artery→the femoral artery→the popliteal artery.

The femoral artery gives off the deep femoral artery which branches into the lateral and medial femoral circumflex arteries and the perforating arteries.

3.4.3 The femoral vein.

The popliteal vein→the femoral vein→the external iliac vein.

3.4.4 The femoral nerve.

It arises from the lumbar plexus and enters the femoral triangle posterior to the inguinal ligament.

Muscular branches supply the pectineus, the sartorius and the quadriceps femoris.

Cutaneous branches include the anterior cutaneous branches and the saphenous nerve.

3.5 The regional records.

3.5.1 The lacuna musculorum.

Bounded by the inguinal ligament anteriorly, the ilium posterolaterally and the iliopectineal arch medially.

Transfer the iliopsoas, the femoral nerve and the lateral femoral cutaneous nerve.

3.5.2 The lacuna vasorum.

Bounded by the inguinal ligament anteriorly, the pectineal ligament posteriorly, the iliopectineal arch laterally and the lacunar ligament medially.

Transfer the femoral vessels, the femoral canal and the lymphatic vessels.

3.5.3 The femoral sheath.

Formation: It is a funnel shaped fascial tube which is formed by transversal abdominal fascia anteriorly and iliac fascia posteriorly.

Compartments and contents: It is subdivided by two partitions into three compartments. The lateral one contains the femoral artery. The intermediate one contains the femoral vein. And the medial compartment forms the femoral canal.

3.5.4 The femoral canal.

It is the medial compartment of the femoral sheath.

Contents: the lymphatic vessels, the deep inguinal lymph node and fat.

The superior opening: It is called the femoral ring which is formed by the inguinal ligament anteriorly, the pectineal ligament posteriorly, the femoral vein laterally and the lacunar ligament medially. The femoral septum, the extraperitoneal tissue, covers the femoral ring.

Clinical significance: the femoral hernia happens when the abdominal viscus protrudes through the femoral ring into the femoral canal.

3.5.5 The femoral triangle.

Boundaries: The femoral triangle is bounded superiorly by the inguinal ligament, medially by the medial border of the adductor longus, laterally by the medial border of the sartorius.

Contents: From the lateral to the medial side, they are arranged as the femoral Nerve, the femoral Artery, the femoral Vein, the femoral canal and the deep inguinal Lymph nodes (NAVEL, E means empty).

4. Case analysis

4.1 Patient X, female, 79 years old, bellyache for 3 days, no defecation for the last 2 days. A hard and painful sac could be palpated below the medial part of the left inguinal groove. Abdominal X-ray shows intestinal obstruction. Preliminary diagnose is femoral hernia.

Questions are as follows.

1) The content of the hernia sac normally is small intestine. which structure should it pass through to form this sac? To a healthy person, which things are there in this structure?

2) Try to explain the reason of intestinal obstruction.

4.2 Patient X, male, 25 years old, he couldn't extend his knee joint of right leg after operation carried on the inguinal region. Physical examination showed that sensory disorder of skin on the anterior thigh and medial leg. Preliminary diagnose is femoral nerve injury.

Questions are as follows.

1) Which muscles does the femoral nerve control?

2) Why does the sensory disorder of this special area happen?

5. Multiple-choice questions (Only one answer is correct)

5.1 The femoral sheath

- A. is a funnel shaped fascial tube formed by the fascia lata
- B. is a prolongation of deep fascia of the thigh
- C. opens downwards into Hunter's canal
- D. can be divided into three compartments

5.2 The lacuna musculorum transfers the

- A. femoral artery
- B. femoral vein
- C. femoral nerve
- D. femoral canal

5.3 Which muscle can flex the hip and knee joint?

- A. quadriceps femoris
- B. Sartorius
- C. adductor longus
- D. pectineus

5.4 Which muscle can flex the hip joint and extend the knee joint?

- A. Sartorius
- B. adductor longus
- C. biceps femoris
- D. quadriceps femoris

5.5 Which artery is palpable deep to the inguinal ligament?

- A. anterior tibial artery
- B. femoral artery
- C. popliteal artery
- D. profunda femoris artery

5.6 Regarding the femoral triangle

- A. the femoral vein, artery, and nerve lie in the femoral sheath
- B. the femoral nerve lies most medially in the femoral triangle
- C. the lateral border of the femoral triangle is formed by the lateral border of sartorius muscle
- D. the femoral canal lies medial to the femoral vein

5.7 Which is not located in the femoral triangle?

- A. the femoral nerve
- B. the femoral artery
- C. the femoral vein
- D. the great saphenous vein

5.8 Which one does not drain into the greater saphenous vein?

- A. The superficial epigastric vein
- B. The superficial iliac circumflex vein
- C. The external pudendal vein
- D. The inferior epigastric vein

- 5.9 The lacuna vasorum is bounded anteriorly by the
 A. pectineal ligament B. iliopectineal arch
 C. inguinal ligament D. lacunar ligament

- 5.10 The lacuna musculorum is bounded medially by the
 A. pectineal ligament B. iliopectineal arch
 C. inguinal ligament D. ilium

6. Multiple-choice questions(more than one answer is correct)

- 6.1 The great saphenous vein
 A. begins on the medial side of the dorsum of the foot
 B. enters the femoral vein through the saphenous hiatus
 C. accompanies with the saphenous nerve on the medial surface of the leg
 D. ascends on the posteromedial surface of the knee
- 6.2 The structures passing through the lacuna musculorum are
 A. femoral nerve B. femoral artery and femoral vein
 C. iliopsoas D. lateral femoral cutaneous nerve
- 6.3 The structures passing through the lacuna vasorum are
 A. femoral sheath B. femoral nerve
 C. lymphatic vessels D. femoral artery and vein
- 6.4 The femoral canal
 A. is located in the femoral triangle
 B. contains the femoral artery and vein
 C. contains the small intestine
 D. is closed by femoral septum at the upper opening(femora ring)
- 6.5 The fascia lata
 A. is the deep fascia of the thigh and buttock
 B. is thick on the lateral side and is known as the iliotibial tract
 C. encloses the tensor fascia latae superiorly
 D. is perforated by great saphenous vein inferolateral to the pubic tubercle and known as the saphenous hiatus

Multiple-choice questions(Only one answer is correct)

5.1 D 5.2 C 5.3 B 5.4 D 5.5 B 5.6 D 5.7 D 5.8 D 5.9 C 5.10 B

Multiple-choice questions(more than one answer is correct)

6.1 ABCD 6.2 ACD 6.3 ACD 6.4 AD 6.5 ABCD

(Liu Yanna, Zhang Jianfei, Yu Shengbo)

Section 2 Medial Region of Thigh, Anterior & Lateral Regions of Leg, Dorsum of Foot

1. Key points

1.1 The walls, contents and their location relationship, communications of the adductor canal.

1.2 The medial group muscles of thigh and their innervation. The anterior and lateral group muscles of the leg and their innervation.

2. Essential dissection procedures

2.1 Dissect the adductor canal.

The cadaver is placed in the supine position. On the middle third of the thigh, move the sartorius laterally to expose the adductor lamina, which extends from the adductor longus to the vastus medialis. Cut the adductor lamina longitudinally to open the adductor canal, and clean out the connective tissue to identify the saphenous nerve, the femoral artery and vein. After that, check the lateral wall of the canal, the vastus medialis, and the posterior wall, the adductor longus and magnus. In a lower end of the adductor canal, find out adductor tendinous opening, through which, the adductor canal opens into the popliteal fossa.

2.2 Examine the medial group of the muscles of the thigh and their innervations.

Clean and observe the pectineus inferolateral to the pubic tubercle. Lower to the pectineus, identify the adductor longus and cut through it near its upper origin and reflect it downwards. The adductor brevis is exposed, which is covered by the adductor longus. The anterior and posterior branches of the obturator nerve can be found anterior and posterior to the adductor brevis respectively. The gracilis is medial to the adductor longus. The biggest muscle, the adductor magnus is deep and lower to the adductor brevis in the medial region of the thigh.

2.3 Make 3 incisions on the anterior region of the leg and the dorsum of the foot(Figure 2).

2.3.1 A vertical incision is made along the anterior margin of the tibia from above to the second toe of the foot.

2.3.2 A transversal incision is made at the level of the malleoli. It must be shallow to avoid cutting the superficial veins and the cutaneous nerves.

2.3.3 A transverse incision is made across the webs of the toes on the dorsum of the foot.

2.4 Reflect the skin flaps medially and laterally.

2.5 In the superficial fascia of the dorsum of foot, identify the dorsal venous arch. Clean it and examine the medial end of the dorsal venous arch continuing to the great saphenous vein and the lateral end of the dorsal venous arch continuing to the small saphenous vein. On the medial side of the arch, identify the great saphenous vein and follow it upwards anterior to the medial malleolus and medial aspects of the leg. On the lateral side, find the small saphenous vein and follow it upwards posterior to the lateral malleolus.

2.6 Trace the great saphenous vein anterior to the medial malleolus and along the medial surface of the leg and examine the saphenous nerve accompanying it.

2.7 In the lateral distal third of the leg locate the superficial peroneal nerve. Trace it downward to the dorsum of foot. Examine the cutaneous branch of the deep peroneal nerve in the web between the first and second toes.

2.8 Remove the superficial fascia to check the deep fascia of the leg and identify the superior and inferior extensor retinacula on the anterior surface of the ankle joint. Cut off the deep fascia as possible as you can, while the superior and inferior extensor retinacula need to be preserved. The deep fascia of the leg forms anterior and posterior intermuscular septa attaching to the fibula, which divide the leg into anterior/posterior/lateral osseo fascial compartments.

2.9 Dissect the anterior osseo fascial compartment of the leg.

Identify three muscles arranged from the tibia to lateral side as the tibialis anterior, the extensor hallucis longus and the extensor digitorum longus. The deep peroneal nerve and the anterior tibial vessels can be found between the tibialis anterior and the extensor hallucis longus. Trace the anterior tibial vessels downwards to the dorsum of foot to examine the dorsal artery of the foot.

2.10 Dissect the lateral osseo fascial compartment of the leg.

Distinguish the peroneus longus(superficial)and brevis(deep). Cut the upper part of the peroneus longus below the fibular head to expose the common peroneal nerve around the neck of the fibula and then examine that this nerve is subdivided into the superficial peroneal nerve and the deep peroneal nerve.

3. Main contents

3.1 The muscles, vessels and nerves of the medial region of the thigh.

The medial group of muscles of the thigh includes the pectineus, the adductor longus, the adductor brevis, the adductor magnus and the gracilis. They are supplied by the obturator nerve except the pectineus.

The obturator artery arises from the internal iliac and pass through the obturator canal.

The obturator nerve arises from lumbar plexus and accompanies with the obturator vessels through the obturator canal where it divides into the anterior and posterior branches.

3.2 The regional records.

3.2.1 The adductor canal(or Hunter's canal).

It is a deep furrow on the medial side of the middle of the thigh, about 15cm in length. It starts at the apex of the femoral triangle and ends in the adductor tendinous opening of the adductor magnus.

Boundaries: anteriorly by the sartorius and the adductor lamina, posteriorly by the adductor longus and the adductor magnus and laterally by the vastus medialis.

Contents and their location relationship: They are arranged from before backward as the nerve to the vastus medialis and the saphenous nerve, the femoral artery and the femoral vein.

Communications: superiorly with the apex of the femoral triangle and inferiorly with the popliteal fossa.

3.2.2 The great saphenous vein(see Section 1, 3.2.1).

3.2.3 The anterior group of muscles of the leg and their innervation.

There are the tibialis anterior, the extensor hallucis longus and the extensor digitorum longus in anterior region of the leg. The peroneus tertius is the lateral lower part of the extensor digitorum longus(not always present). They are supplied by the deep peroneal nerve.

3.2.4 The lateral group of muscles of the leg and their innervation.

The peroneus longus and the peroneus brevis are supplied by the superficial peroneal nerve. The tendons of these two muscles are bound down by the peroneal retinacula and provided with a common synovial sheath. Their actions are the eversion and plantar flexion of the foot.

3.2.5 The anterior tibial artery.

The popliteal artery→the anterior tibial artery(in the anterior compartment of the leg)→the dorsal artery of the foot.

3.2.6 The deep and superficial peroneal nerves.

The common peroneal nerve gives off the deep and superficial peroneal nerves on the level of neck of fibula.

The deep peroneal nerve supplies the anterior group muscles of the leg and a small area of skin of the adjacent sides of the big and second toes.

The superficial peroneal nerve supplies the lateral group muscles of the leg and the skin of the lateral distal thirds of the leg and large part of the dorsum of foot.

3.2.7 The superficial structures of the dorsum of foot.

1)The dorsal venous arch drains into the great saphenous vein on the medial side, and into the small saphenous vein on the lateral side.

2)The cutaneous nerves of the dorsum of the foot.

The medial and intermediate dorsal cutaneous nerves are the terminal branches of the superficial peroneal nerve.

The lateral dorsal cutaneous nerve is the terminal branch of the sural nerve.

The saphenous nerve supplies the skin along the medial side of the foot.

The cutaneous branch of the deep peroneal nerve supplies the skin of the adjacent sides of the big and second toes.

4. Case analysis

4.1 Patient X, male, 33 years old, lateral side of right knee joint was cut but no bone fracture happens. Anterior and lateral skin of the leg plus dorsum of foot is insensible and unpainful. A dropping foot could be observed if his right leg is raised. And he also can't do ankle joint dorsal flexion himself. Try to explain the causes of above symptom based on regional structures.

4.2 Patient X, male, 50 years old, fell down from scaffold and medial part of right thigh bumped on a iron rode. The chief complaint was that he couldn't put his right thigh on the left one. Please explain the possible injury nerve and why the above symptom happen.

5. Multiple-choice questions(Only one answer is correct)

5.1 Which muscle can evert the foot?

A. The peroneus longus

B. The tibialis anterior

C. The tibialis posterior

D. The soleus