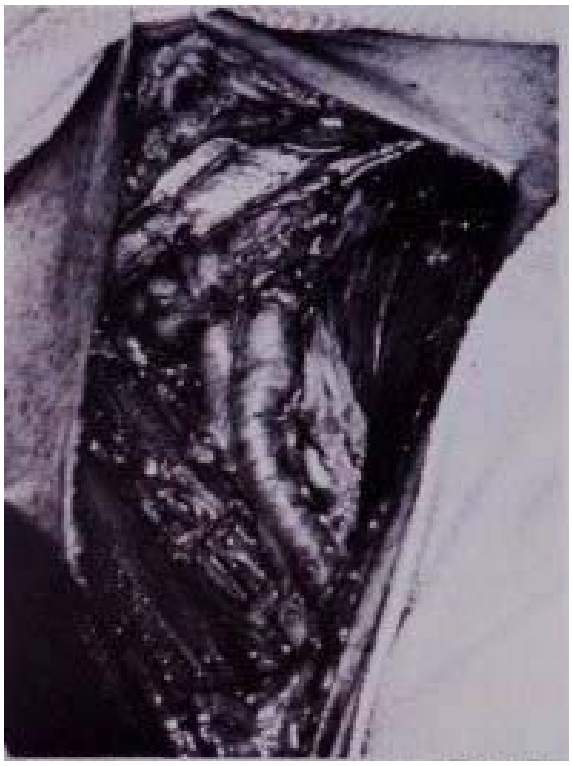
Coverage of Groin Wounds with Vascular Exposure



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M.B.B.Ch.

Coverage of Groin Wound with Vascular Exposure

ESSAY

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(M.Sc.)

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Abstract

The successful management of soft tissue defect in the groin has long been a challenging problem for the reconstructive surgeon. The exposed groin's vessels may be due to reconstruction of diseased vessels including infected graft, with management of vascular injuries due to trauma, or after radical lymphadenectomy and soft tissue tumour excision. The application of muscle and musculocutaneous flaps offers a single simple, safe, one stage method for reconstruction.

Key Words

Reconstructive surgery.

The musculocutaneous flaps.

Abstract

باللغة العربية

أن التدخل الجراحي لأعادة بناء النقص للأنسجة الرخوة في منطقة اعلي الفخذ نحـو الـبطن كان يشكل مشكلة لجراحى عمليات التكميل البنائي. أن التدخل الجراحـي المـسبب لتعريـة الأوعية الدموية بالمنطقة قد يكون بغرض التصليح او الترقيع للأوعية الدموية نتيجة الاصابة او التاف بالامراض او نتيجة الاستئصال الجذري للعقد اللمفاوية او الاورام اللينة بالمنطقـة. أن أستخدام الترقيع بنقل شريحة عضلية أو شريحة عضلية جلدية يقدم وسـيله بـسيطة مـن مرحلة واحدة لعملية البناء التكاملي لسد هذا النقص في الأنسجة الرخوة بالمنطقة

الكلمات الدالة

التكميل الغطائي

الشريحة العضلية الجلدية

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Youssab Samir Y. Greiss

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CONTENTS

Introduction

The successful management of soft tissue defect in the groin has long been a challenging problem for the reconstructive surgeon.

The application of muscle and musculocutaneous flaps offers a simple safe one stage method for reconstruction. (Mathes S.J. and Nahai F.; 1982)

Wound problem could be primary due to traumatic or non traumatic lesions, or secondary to wound dehiscence

The evaluation and treatment of the wound problem would require a through understanding of

1) The broad principles of surgery.
2) The anatomy of the groin, & thigh; and including the vascular anatomy.

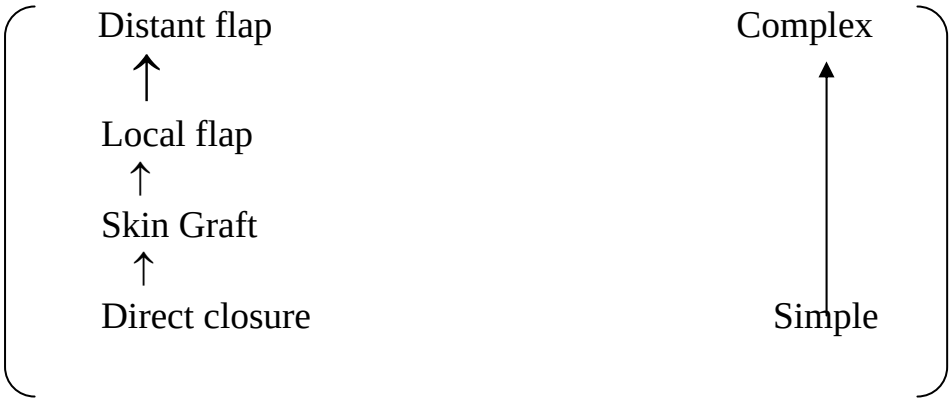
The majority of surgical defect wounds maintain local capillary circulation within both the wound base and adjacent skin, thus direct closure; skin graft or local flaps provide coverage.

The skin graft coverage considers ideal coverage for the shallow wound. It is method of choice provided vital structures are not exposed (femoral vessel & nerves). Local tissue rearrangement maintains form in deep small defect. The defect with missing muscle and skin may benefit from a muscle or musculocutaneous flaps to improve contour as well as coverage.

Progression up the reconstructive ladder becomes necessary when local wound circulation is impaired. Local random flaps generally have vascular compromise by the same mechanism that caused the nearby wound. Therefore the flap with an intact vascular pedicle distant to the defect is selected for coverage vital structures such as femoral vessels exposed as a result of extirpative surgery in the groin or wound dehiscence due to infection.

Although coverage is essential, selection of techniques from the reconstructive ladder is also based on restoration of form and contour. The techniques that best restores form are selected from the methods with the ability to provide safe coverage.

The constructive ladder: table 1 (Mathes S.J. and Nahai F.; 1982)



The aim of work

The aim in this study we are going to discuss the etiology of vascular exposure of the femoral vessels, the needs of coverage of these vessels after exposure and the main principles of coverage with comparing the different principles of coverage to each other discussing the benefits and complications of each. We are also going to give an account on the management of special cases such as coverage of infected vascular graft in the groin. At last our aim is to review the conclusions, evaluations and complications of different methods of coverage of groin vascular exposure wounds.

UNIT 1:

RELEVANTANATOMY.

Chapter 1:

Relevant anatomy of the groin & upper thigh.

Chapter 2:

General vascular anatomy of muscles.

Chapter 3:

Musculocutaneous perforators.

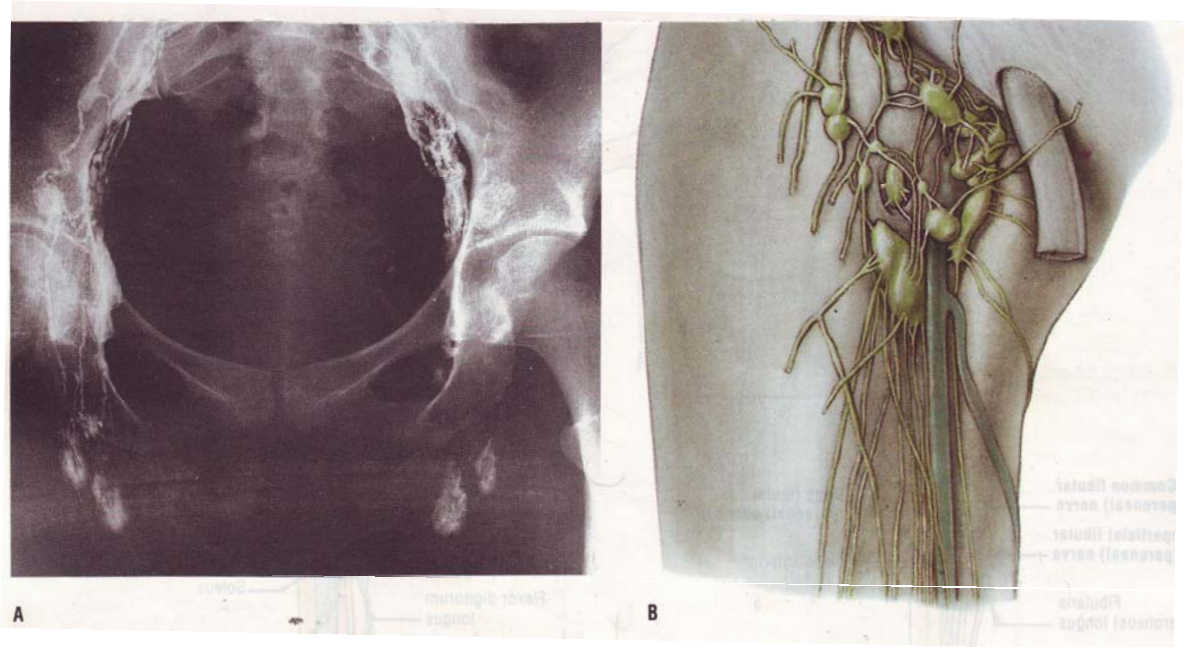
CHAPTER 1

RELEVANT ANATOMY OF THE GROIN AND UPPER THIGH

ANTEROMEDIAL ASPECT OF THIGH

SUPERFICIAL FASCIA; it is differentiated into: Superficial fatty layer and deep membranous layer. The two layers are continuous with the corresponding layers of anterior abdominal wall; between the two layers lay the superficial nerves, vessels and lymph nodes in the parts of the thigh. The deep membranous layer is firmly attached to the deep fascia of the thigh along line just below the inguinal ligament; this fusion prevents escape of urine to the thigh whenever the urethra is injured. (Gray's anatomy; 1977)

Fig:1 The inguinal lymph nodes (Grant's Atlas; 1996)



DEEP FASCIA {FASCIA LATA }:

It is a very strong fibrous sheet that envelops the whole thigh like a stocking extending from the root of the line above to the knee below.

ATACHMENTS*: Superiorly*; to the hip bone and its ligament as follows; In front to the inguinal ligament and symphysis pubis. Behind to the back of sacrum, coccyx and sacrotuberous ligament. Laterally to the outer lip of the iliac crest. Medially to the conjoint and ischopubic ligament.

Inferiorly; to the bony prominences around the knee, the patella, the two femoral condoyles, the two tibial condoyles and the head of the fibula. The fascia lata varies in thickness in the different parts of the thigh. It is thin on the medial and posterior aspect; very thick on the lateral aspect forming the iliotibial tract. (Gray's anatomy ; 1977)

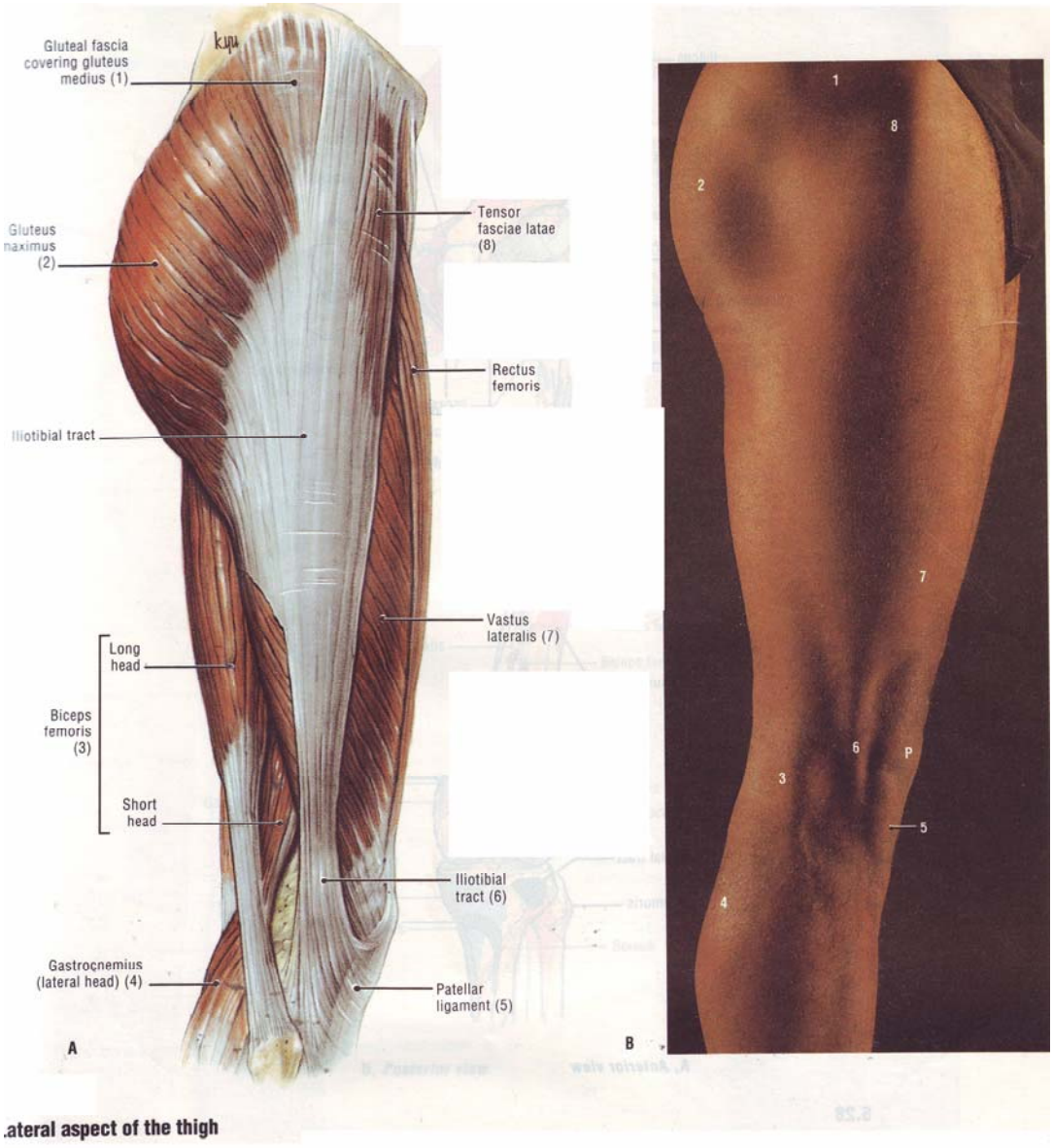
ILIOTIBIAL TRACT: It is a thickened band of fascia lata 1 – 2 inch wide lying on the lateral aspect of the thigh.

ATACHMENTS : ABOVE : to the tubercle of the iliac crest , BELOW : to ; the anterior portion of lateral condoyle of tibia , the lateral border of the patella , the head of the fibula and the of the capsule of the knee joint .

STRUCTURES ATTACHED to iliotibial tract:

- *Anteriorly* : Insertion of the tensor fascia lata muscle
- *Posteriorly* : Insertion of superficial 3/ 4 of gluteus maximus
- *Deep surface*: The lateral intermuscular septum.

Fig: 2 Lateral aspect of the thigh . (Grant's Atlas; 1996)



ateral aspect of the thigh

FEMORAL TRIANGLE

It is the largest intermuscular space in the lower limb. It lies in the upper 1/ 3 of front of thigh just below the inguinal ligament. Its shape forms a shallow triangular depression with base above and apex below. It is bounded; laterally by medial border of sartorius muscles and medially by medial border of adductor longus muscles. The base is formed of the inguinal ligament which curves gently from the anterior superior iliac spine to the pubic tubercle and the apex is the meeting point of the medial and the lateral borders {sartorius overlapping adductor longus}. (Cunningham's ; 1973)

ROOF : It is formed of

A -Skin, superficial fascia with its contents of vessels, nerves and lymph nodes. The vessels include

- The upper end of great saphenous vein and its tributaries.
- The three superficial branches of common femoral artery and their accompanying veins {superficial epigastric a. and v., superficial circumflex a. and v. , superficial external pudendal a. and v. }.

Nerves : Four superficial nerves

- The anterior branch of lateral cutaneous nerve of the thigh at the upper lateral angle of the femoral triangle.
- .The femoral branch of genitofemoral nerve below the middle of the inguinal ligament.
- The ilioinguinal nerve at the upper medial angle of femoral triangle.
- The intermediate cutaneous nerve of the thigh at the apex.

Lymph nodes : Two groups of superficial inguinal lymph nodes

- The horizontal group : below and parallel to the inguinal ligament
- The vertical group alongside the great saphenous vein.

Fig:3. Femoral triangle (Grant's Atlas; 1996)

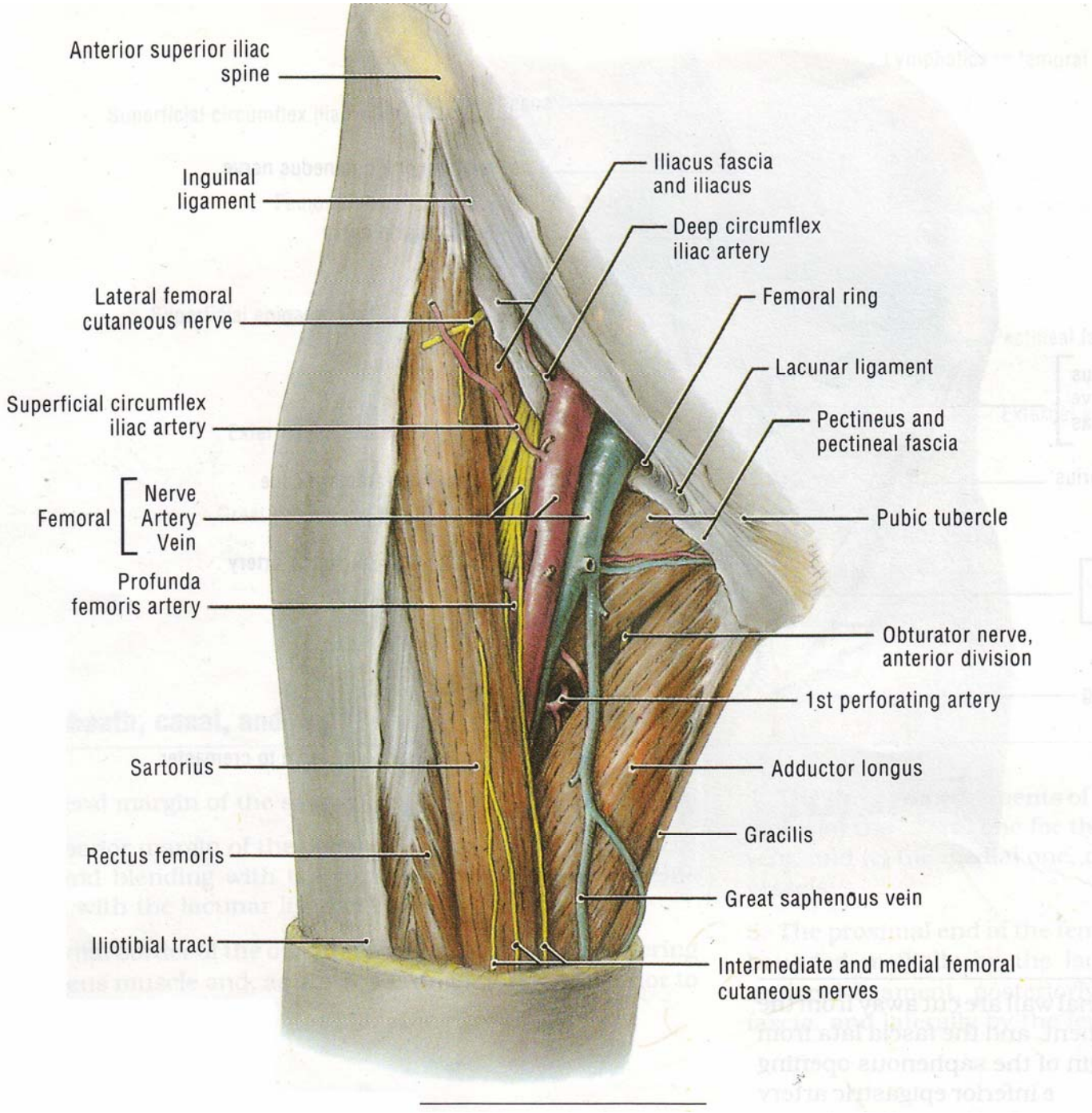


Fig :4 **.**Superficial inguinal arteries and veins (Grant's Atlas; 1996)

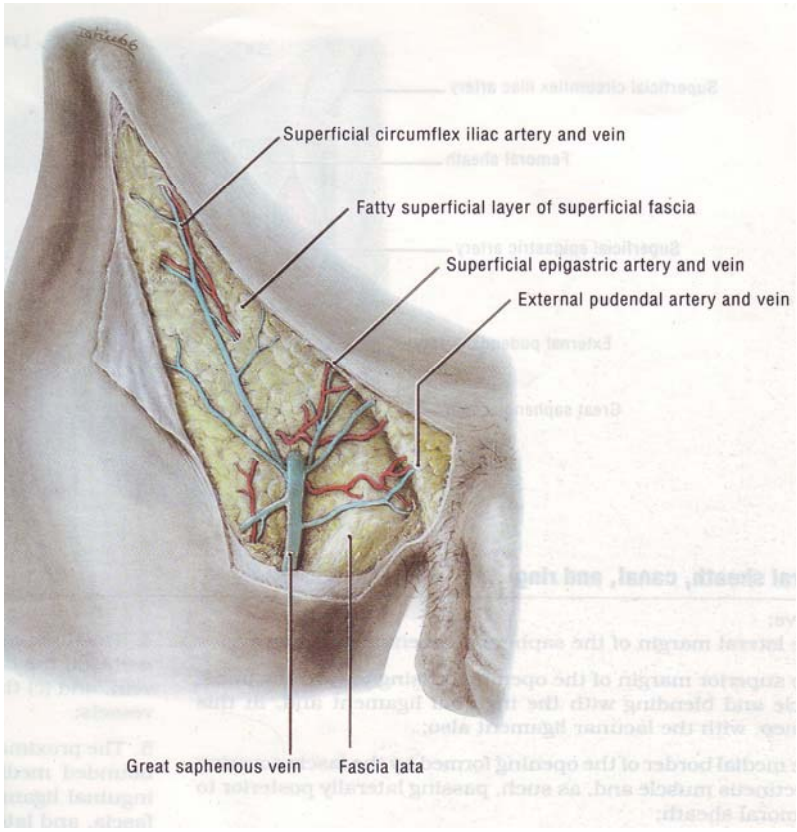
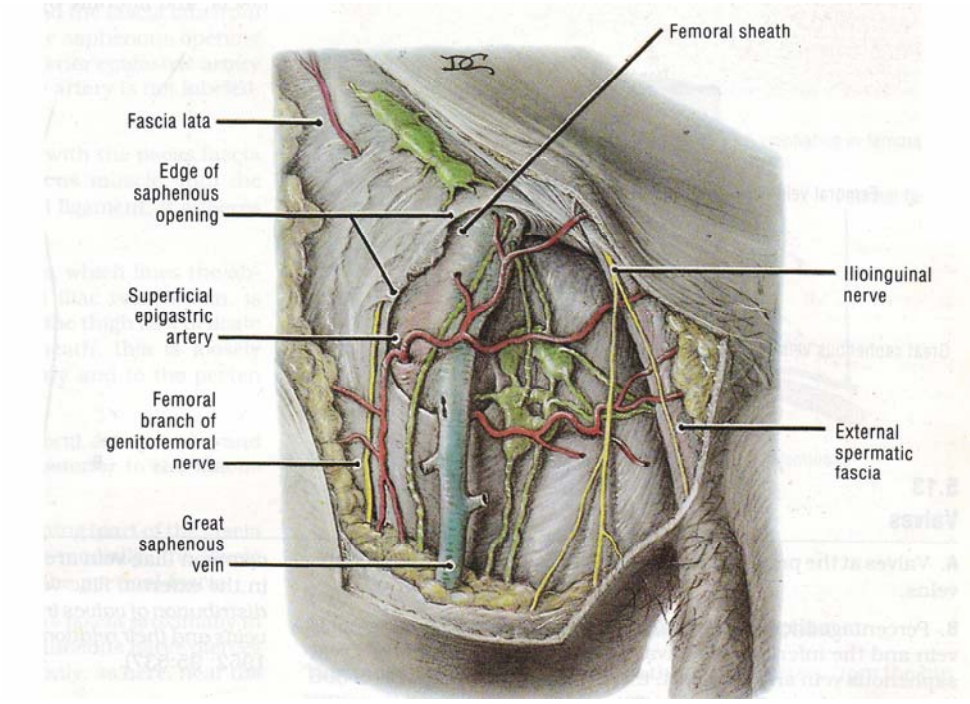


Fig: 5. Saphenous opening. (Grant's Atlas; 1996)



B- Deep fascia of the roof:

It is the upper layer of the fascia lata containing the saphenous opening in the fascia lata in the upper part of the front of the thigh. Its center lies 1.5 inches below and lateral to the pubic tubercle; its size is 3 X 1.5 cm with upper, lower and lateral sharp margins which form the falciform margin of the saphenous opening. The medial margin is ill defined. The opening is closed by cibriform fascia which is a thin layer of perforated fascia. (Cunningham's ; 1973)

Structures passing through the opening.

- Superficial inguinal arteries {from common femoral artery }.
- Great saphenous vein.
- Lymphatic vessels passing from the superficial inguinal L.Ns to the deep inguinal L.Ns.

FLOOR OF THE FEMORAL TRIANGLE:

The floor of the triangle is a trough with sloping walls laterally and medially. The adductor muscle with the pectineus muscle forms the medial wall; the iliopsoas muscle with the sartorius form the lateral wall.

Communications of femoral triangle:

It communicate superiorly deep to the inguinal ligament with the iliac fossa of abdomen; and inferiorly through its apex with the upper end of the subsartorial canal.

Contents of the femoral triangle

1. Femoral sheath surrounding the upper four cm of the femoral vessels & femoral canal.
2. The common, superficial femoral artery and femoral vein, Profunda artery and vein with their branches.
3. Femoral nerve &its branches; outside and lateral to the sheath
4. Femoral branch of genitofemoral nerve in the lateral compartment of the sheath.
5. Lateral cutaneous nerve of the thigh in the upper lateral angle of the triangle.
6. Deep group of inguinal lymph Ns. (1-3) along the medial side of the femoral vein.
7. Collection of fat in which the previous structures are embedded. (Cunningham's ; 1973)