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# SRB's Clinical Methods in SURGERY

4th Edition



**Sriram Bhat M**

*Forewords*
CR Ballal
Narayanaswamy Srinivasan
Harish Rao
Sribatsa Kumar Mohapatra

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# SRB's Clinical Methods in SURGERY

*As per the Competency-based Medical Education Curriculum (NMC)*

**Fourth Edition**

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| SU1.3 | Describe basic concepts of perioperative care | Y | 2 | 43 |
| SU6.1 | Define and describe the etiology and pathogenesis of surgical infections | Y | 3, 4, 5, 27, 28 | 57, 88, 143, 511, 517 |
| SU6.2 | Enumerate prophylactic and therapeutic antibiotics plan appropriate management | Y | 3 | 57 |
| SU9.1 | Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient | Y | 2, 42, 43 | 43, 624, 633 |
| SU9.2 | Biological basis for early detection of cancer and multidisciplinary approach in management of cancer | Y | 2, 42 | 43, 624 |
| SU9.3 | Communicate the results of surgical investigations and counsel the patient appropriately | Y | 2 | 43 |
| SU14.2 | Describe surgical approaches, incisions and the use of appropriate instruments in surgery in general | Y | 41 | 609 |
| SU14.3 | Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots and needles) | Y | 41 | 609 |
| SU17.4 | Describe pathophysiology, mechanism of head injuries | Y | 32 | 533 |
| SU17.5 | Describe clinical features for neurological assessment and GCS in head injuries | Y | 32 | 533 |
| SU17.6 | Chose appropriate investigations and discuss the principles of management of head injuries | Y | 32 | 533 |
| SU17.7 | Describe the clinical features of soft tissue injuries. Chose appropriate investigations and discuss the principles of management | Y | 10 | 234 |
| SU17.8 | Describe the pathophysiology of chest injuries | Y | 33, 34 | 537, 540 |
| SU17.9 | Describe the clinical features and principles of management of chest injuries | Y | 33, 34 | 537, 540 |
| SU17.10 | Demonstrate airway maintenance. Recognize and manage tension pneumothorax, hemothorax and flail chest in simulated environment | Y | 33, 34 | 537, 540 |
| SU18.1 | Describe the pathogenesis, clinical features and management of various cutaneous and subcutaneous infections | Y | 4 | 88 |
| SU18.2 | Classify skin tumors | Y | 4 | 88 |
| | Differentiate different skin tumors and discuss their management | | | |
| SU18.3 | Describe and demonstrate the clinical examination of surgical patient including swelling and order relevant investigation for diagnosis. Describe and discuss appropriate treatment plan | Y | 4 | 88 |
| SU19.1 | Describe the etiology and classification of cleft lip and palate | Y | 12, 29 | 266, 520 |
| SU19.2 | Describe the principles of reconstruction of cleft lip and palate | Y | 12, 29 | 266, 520 |
| SU20.1 | Describe etiopathogenesis of oral cancer symptoms and signs of oropharyngeal cancer | Y | 11 | 238 |
| SU20.2 | Enumerate the appropriate investigations and discuss the principles of treatment | Y | 11 | 238 |
| SU21.1 | Describe surgical anatomy of the salivary glands, pathology, and clinical presentation of disorders of salivary glands | Y | 14 | 280 |
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| SU22.3 | Demonstrate and document the correct clinical examination of thyroid swellings and discus the differential diagnosis and their management | Y | 16 | 317 |
| SU22.4 | Describe the clinical features, classification and principles of management of thyroid cancer | Y | 16 | 317 |
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| SU24.1 | Describe the clinical features, principles of investigation, prognosis and management of pancreatitis | Y | 21, 22 | 411, 432 |
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| SU24.3 | Describe the principles of investigation and management of pancreatic disorders including pancreatitis and endocrine tumors | Y | 21, 22 | 411, 432 |
| SU25.1 | Describe applied anatomy and appropriate investigations for breast disease | Y | 17 | 340 |
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| SU26.3 | Describe the clinical features of mediastinal diseases and the principles of management | Y | 31 | 529 |
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| SU27.1 | Describe the etiopathogenesis, clinical features, investigations and principles of treatment of occlusive arterial disease | Y | 6 | 153 |
| SU27.2 | Demonstrate the correct examination of the vascular system and enumerate and describe the investigation of vascular disease | Y | 6 | 153 |
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| SU27.4 | Describe the types of gangrene and principles of amputation | Y | 6 | 153 |
| SU27.5 | Describe the applied anatomy of venous system of lower limb | Y | 7 | 181 |
| SU27.6 | Describe pathophysiology, clinical features, investigations and principles of management of DVT and varicose veins | Y | 7 | 181 |
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| SU28.5 | Describe the applied anatomy and physiology of esophagus | Y | 25 | 488 |
| SU28.6 | Describe the clinical features, investigations and principles of management of benign and malignant disorders of esophagus | Y | 25 | 488 |
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| SU28.8 | Describe and discuss the etiology, the clinical features, investigations and principles of management of congenital hypertrophic pyloric stenosis, peptic ulcer disease, carcinoma stomach | Y | 21 | 411 |
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| Number | The student should be able to | Core (Y/N) | Chapter number | Page Number |
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| SU28.12 | Describe the applied anatomy of biliary system. Describe the clinical features, investigations and principles of management of diseases of biliary system | Y | 21 | 411 |
| SU28.13 | Describe the applied anatomy of small and large intestine | Y | 21 | 411 |
| SU28.15 | Describe the clinical features, investigations and principles of management of diseases of Appendix including appendicitis and its complications | Y | 22 | 432 |
| SU28.16 | Describe applied anatomy including congenital anomalies of the rectum and anal canal | Y | 24 | 472 |
| SU28.17 | Describe the clinical features, investigations and principles of management of common anorectal diseases | Y | 24 | 472 |
| SU28.18 | Describe and demonstrate clinical examination of abdomen. Order relevant investigations. Describe and discuss appropriate treatment plan | Y | 22, 23 | 432, 446 |
| SU29.1 | Describe the causes, investigations and principles of management of hematuria | Y | 26 | 493 |
| SU29.2 | Describe the clinical features, investigations and principles of management of congenital anomalies of genitourinary system | Y | 26 | 493 |
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| AN10.6 | Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis | N | 8, 9 | 201, 220 |
| AN10.7 | Explain anatomical basis of enlarged axillary lymph nodes | N | 8 | 201 |
| AN12.8 | Describe anatomical basis of clawhand | Y | 9 | 220 |
| AN12.10 | Explain infection of fascial spaces of palm | N | 10, 27 | 234, 511 |
| AN12.11 | Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions | Y | 9, 10 | 220, 234 |
| AN12.12 | Identify and describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm | Y | 9 | 220 |

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| Number | The student should be able to | Core (Y/N) | Chapter number | Page Number |
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| AN12.13 | Describe the anatomical basis of wrist drop | Y | 9 | 220 |
| AN12.14 | Identify and describe compartments deep to extensor retinaculum | Y | 10 | 234 |
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| AN15.4 | Explain anatomical basis of psoas abscess and femoral hernia | N | 18 | 366 |
| AN18.3 | Explain the anatomical basis of foot drop | Y | 9 | 220 |
| AN19.3 | Explain the concept of "peripheral heart" | Y | 7 | 181 |
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| AN20.5 | Explain anatomical basis of varicose veins and deep vein thrombosis | Y | 7 | 181 |
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| AN23.7 | Mention the extent, relations and applied anatomy of lymphatic duct | Y | 8 | 201 |
| AN28.10 | Explain the anatomical basis of Frey's syndrome | N | 14 | 280 |
| AN29.2 | Explain anatomical basis of Erb's and Klumpke's palsy | Y | 9 | 220 |
| AN30.1 | Describe the cranial fossae and identify related structures | Y | 12, 13, 30 | 266, 275, 524 |
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| AN33.2 | Describe and demonstrate attachments, direction of fibers, nerve supply and actions of muscles of mastication | Y | 12, 13 | 266, 275 |
| AN33.4 | Explain the clinical significance of pterygoid venous plexus | Y | 12, 13 | 266, 275 |
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| AN44.1 | Describe and demonstrate the planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions and quadrants of abdomen | Y | 23 | 446 |
| AN44.4 | Describe and demonstrate extent, boundaries, contents of inguinal canal including Hesselbach's triangle | Y | 18 | 366 |
| AN44.5 | Explain the anatomical basis of inguinal hernia | Y | 18 | 366 |
| AN44.6 | Describe and demonstrate attachments of muscles of anterior abdominal wall | Y | 23 | 446 |
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| AN46.5 | Explain the anatomical basis of phimosis and circumcision | N | 20 | 403 |
| AN47.1 | Describe and identify boundaries and recesses of lesser and greater sac | Y | 21 | 411 |
| AN47.2 | Name and identify various peritoneal folds and pouches with its explanation | Y | 21 | 411 |
| AN47.3 | Explain anatomical basis of ascites and peritonitis | N | 22 | 432 |
| AN47.4 | Explain anatomical basis of subphrenic abscess | N | 22 | 432 |
| AN47.5 | Describe and demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects) | Y | 21, 23 | 411, 446 |

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| Number | The student should be able to | Core (Y/N) | Chapter number | Page Number |
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| AN47.7 | Mention the clinical importance of Calot's triangle | N | 21 | 411 |
| AN48.8 | Mention the structures palpable during vaginal and rectal examination | N | 24 | 472 |
| AN52.6 | Describe the development and congenital anomalies of foregut, midgut and hindgut | Y | 21 | 411 |
| AN52.7 | Describe the development of urinary system | Y | 26 | 493 |
| AN55.1 | Demonstrate the surface marking of regions and planes of abdomen, superficial inguinal ring, deep inguinal ring , McBurney's point, renal angle and Murphy's point | Y | 23 | 446 |
| AN55.2 | Demonstrate the surface projections of stomach, liver, fundus of gallbladder, spleen, duodenum, pancreas, ileocecal junction, Kidneys and root of mesentery | Y | 21, 23 | 411, 446 |
| PA19.1 | Enumerate the causes and describe the differentiating features of lymphadenopathy | Y | 8, 15 | 201, 298 |
| PA19.2 | Describe the pathogenesis and pathology of tuberculous lymphadenitis | Y | 8, 15 | 201, 298 |
| PA19.4 | Describe and discuss the pathogenesis pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma | Y | 8 | 201 |
| PA19.5 | Identify and describe the features of Hodgkin's lymphoma in a gross and microscopic specimen | Y | 8 | 201 |
| PA19.6 | Enumerate and differentiate the causes of splenomegaly | Y | 21, 23 | 411, 446 |
| PA24.4 | Describe and etiology and pathogenesis and pathologic features of carcinoma of the stomach | Y | 21, 23 | 411, 446 |
| PA24.5 | Describe and etiology and pathogenesis and pathologic features of tuberculosis of the intestine | N | 21 | 411 |
| PA24.6 | Describe and etiology and pathogenesis and pathologic and distinguishing features of inflammatory bowel disease | Y | 21 | 411 |
| PA24.7 | Describe the etiology and pathogenesis and pathologic and distinguishing features of carcinoma of the colon | Y | 21, 23 | 411, 446 |
| PA25.2 | Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences | Y | 21 | 411 |
| PA25.4 | Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis | Y | 21, 23 | 411, 446 |
| PA25.5 | Describe the etiology, pathogenesis and complications of portal hypertension | Y | 21 | 411 |
| PA29.2 | Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis | Y | 20 | 403 |
| PA29.3 | Describe the pathogenesis, pathology, hormonal dependency, presenting and distinguishing features, urologic findings and diagnostic tests of benign prostatic hyperplasia | Y | 26 | 493 |
| PA29.4 | Describe the pathogenesis, pathology, hormonal dependency, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate | Y | 26 | 493 |
| PA29.5 | Describe the etiology, pathogenesis, pathology and progression of prostatitis | N | 26 | 493 |
| PA32.6 | Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer | N | 23 | 446 |
| MI7.1 | Describe the etio-pathogenesis and discuss the laboratory diagnosis of infections of genitourinary system | Y | 26 | 493 |
| AS3.1 | Describe the principles of preoperative evaluation | Y | 2 | 43 |
| AS3.2 | Elicit, present and document an appropriate history including medication history in a patient undergoing surgery as it pertains to a preoperative anesthetic evaluation | Y | 2 | 43 |
| AS3.3 | Demonstrate and document an appropriate clinical examination in a patient undergoing General Surgery | Y | 1 | 1 |
| AS3.4 | Choose and interpret appropriate testing for patients undergoing surgery | Y | 1, 2 | 1, 43 |
| AS3.5 | Determine the readiness for General Surgery in a patient based on the preoperative evaluation | Y | 2 | 43 |
| IM5.8 | Describe and discuss the pathophysiology, clinical evolution and complications of cholelithiasis and cholecystitis | Y | 22, 23 | 432, 446 |

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| *Number* | *The student should be able to* | *Core (Y/N)* | *Chapter number* | *Page Number* |
|---|---|---|---|---|
| IM12.9 | Order and interpret diagnostic testing based on the clinical diagnosis including CBC, thyroid function tests and ECG and radio iodine uptake and scan | Y | 2 | 43 |
| IM13.7 | Elicit document and present a history that will help establish the etiology of cancer and includes the appropriate risk factors, duration and evolution | Y | 1 | 1 |
| IM15.5 | Perform, demonstrate and document a physical examination based on the history that includes general examination, volume assessment and appropriate abdominal examination | Y | 22 | 432 |
| PE21.14 | Recognize common surgical conditions of the abdomen and genitourinary system and enumerate the indications for referral including acute and subacute intestinal obstruction, appendicitis pancreatitis perforation intussusception, phimosis, undescended testis, chordee, hypospadiasis, torsion testis, hernia hydrocele, vulval synechiae | Y | 20 | 403 |
| OR4.1 | Describe and discuss the clinical features, investigation and principles of management of tuberculosis affecting major joints (Hip, Knee) including cold abscess and caries spine | Y | 40 | 598 |

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CHAPTER 3

# Examination and Clinical Approach of an Ulcer

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**Competency:** SU6.1; SU6.2.

## DEFINITION

**An ulcer is a break in the continuity of the covering epithelium, either skin or mucous membrane due to molecular/cell death.**

***Wound* is simply a *disruption* of any tissues—soft tissue or bone or internal organs, i.e. *structurally and functionally* whereas ulcer is a disruption or break in the continuity of *any lining tissue*—may be skin, mucous membrane. Ulcer is one of the types of wounds (Fig. 3-1).**

## PARTS OF AN ULCER (FIGS. 3-2 AND 3-3)

1. ***Margin:*** **It may be regular or irregular. It may be rounded or oval in shape. It may be well defined or ill defined. Margin is peripheral limit of an ulcer. It is connected to floor through edge of an ulcer.**
2. ***Edge:*** **Edge is the one which connects floor of the ulcer to the margin.**



**Fig. 3-1** *Typical ulcer* with margin, edge, floor with slough, and surrounding area. *Slough* is dead soft tissue in situ. *Crust or scab* is dried up discharge on the surface.




**Fig. 3-2** Parts of an ulcer (diagrammatic).




**Fig. 3-3** Parts of an ulcer (Photograph).

***Different edges are* (Figs. 3-4 to 3.9)*:***

***Sloping edge:*** **It is seen in healing ulcer. Its inner part is red is due to healthy granulation tissue; middle part is blue due to epithelial proliferation; outer part is white due to scar/fibrous tissue.**



**Fig. 3-4** *Sloping edge* in a healing ulcer.

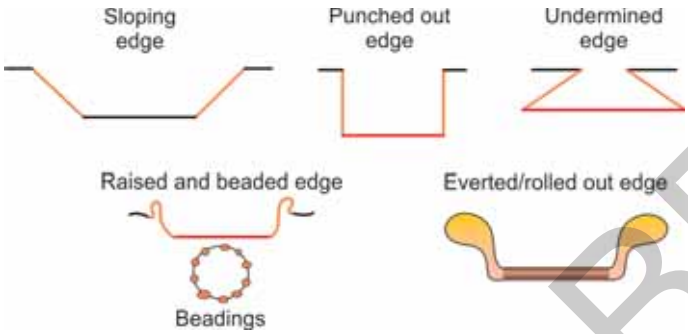


**Fig. 3-5** Types of edges in different ulcers.

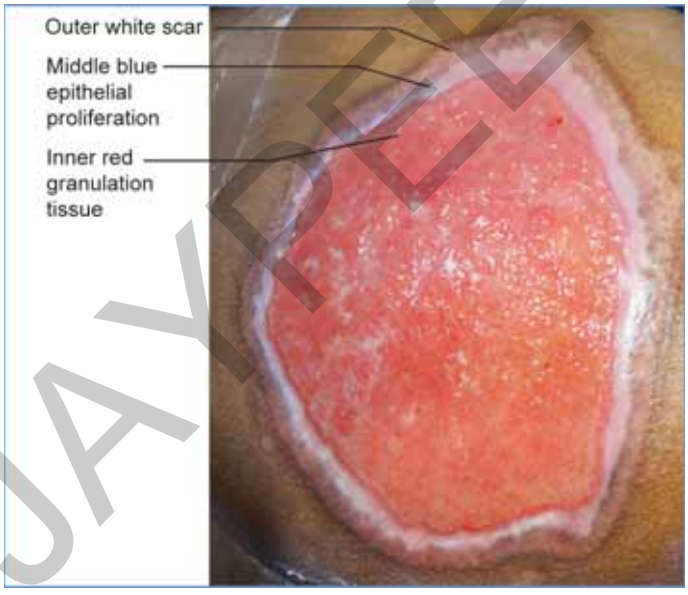


**Fig. 3-6** Typical look of an edge in a healing ulcer.



**Fig. 3-7** Typical basal cell carcinoma (BCC) with *beaded edge*.



**Fig. 3-8** Bed sore is a typical trophic ulcer.



**Fig. 3-9** Typical squamous cell carcinoma (SCC/epithelioma).

***Undermined edge*** **is seen in tuberculous ulcer. Disease process advances in deeper plane (in subcutaneous tissue) whereas epidermis (skin) proliferates inwards. Overhanging skin is blue and unhealthy.**

***Punched out edge*** **is seen in gummatous (syphilitic) ulcer and trophic ulcer. It is due to end arteritis. It is due to rapid destruction of full thickness skin. It is deep with bone as base (Fig. 3-10).**

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**Fig. 3-10** *Trophic ulcer*—punched out edge.



**Fig. 3-12** *Spreading ulcer* copious purulent discharge with slough.

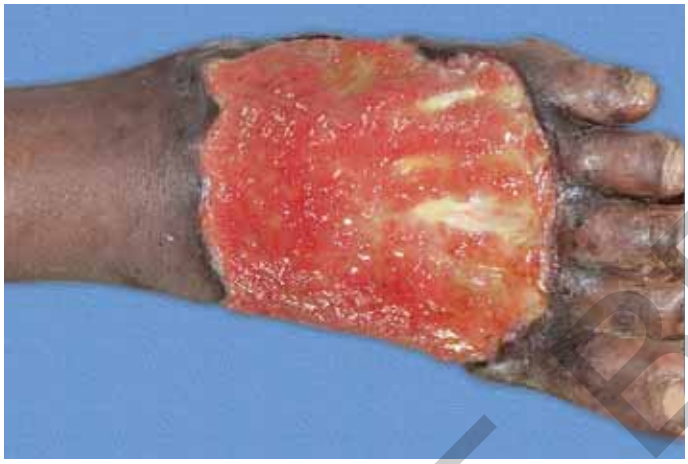

**Fig. 3-11** *Active ulcer* with discharge, slough.



**Fig. 3-13** Typical *spreading ulcer* with purulent discharge.

***Raised and beaded edge*** **(pearly white) is seen in rodent ulcer (BCC). Beads are due to proliferating active cells.**
***Everted edge*** ***(rolled out edge)*****: It is seen in carcinomatous ulcer due to spill of the proliferating malignant tissues over the normal skin.**

3. ***Floor:*** **It is the one which is seen. Floor may contain discharge, granulation tissue or slough (Fig. 3-11).**
4. ***Base:*** **Base is the one where ulcer rests. It may be bone or soft tissues. Base is felt; not seen.**

## LIFE HISTORY OF AN ULCER

***Stage of extension:*** **Ulcer with inflammation spreads along subcutaneous and fascial planes and becoming bigger.**

***Stage of transition:*** **Appearance of granulation tissue and serous discharge in the floor.**

***Stage of repair:*** **Formation of healthy granulation tissue, neoepithelialization, fibrosis and scarring.**

### Classifications

#### *Classification I (Clinical)*

1. ***Spreading ulcer:*** **Here edge is inflamed, irregular and edematous. It is an *acute* painful ulcer; floor does not contain healthy granulation tissue (or granulation tissue is absent), with profuse purulent discharge and slough; surrounding area is red and edematous. Regional (draining) lymph nodes are enlarged and tender due to inflammation. There will be associated fever, pain, impairment of functions with local tissue destruction and with little evidence of regeneration (Figs. 3-12 and 3-13).**
2. ***Healing ulcer:*** **Edge is sloping with healthy pink/red healthy granulation tissue with *scanty/minimal serous discharge* in the floor; slough is absent; regional lymph nodes may or may not be enlarged but when enlarged always nontender. Surrounding area does not show any signs of inflammation or induration; base is not indurated. *Three zones* are observed in healing ulcer. *Inner most red zone* of healthy granulation tissue; *middle bluish zone* of growing epithelium; *outer whitish zone* of fibrosis and scar formation (Figs. 3-14 and 3-15).**
3. ***Nonhealing ulcer:*** **It may be a *chronic* ulcer depending on the cause of the ulcer; here edge depending on the cause may be—punched out (trophic), undermined (tuberculous), rolled out (carcinomatous ulcer), beaded (rodent ulcer); floor contains unhealthy granulation tissue and slough, and serosanguinous/purulent/bloody discharge; regional draining lymph nodes may be enlarged but non tender (Fig. 3-16).**

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**Fig. 3-14** Typical *healing ulcer*.

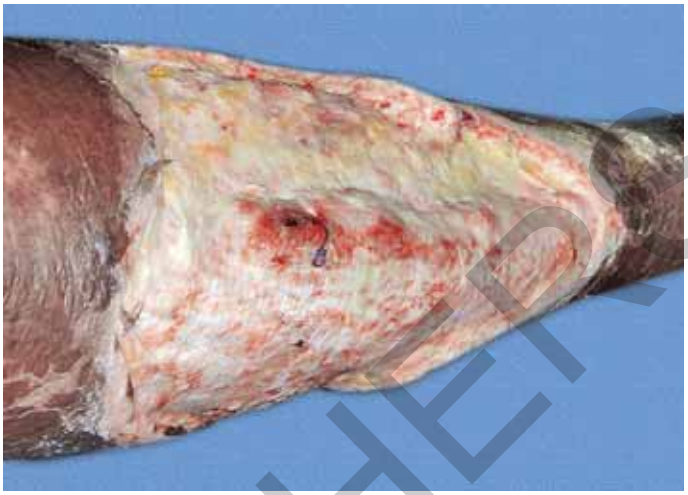

**Fig. 3-17** *Callous ulcer* without any sign of healing and, without any granulation tissue.



**Fig. 3-15** *Healing ulcer* with healthy granulation tissue in the floor; it is ready for split skin grafting.



**Fig. 3-18** *Callous ulcer*. It is stationary ulcer without any sign of healing. There is no healthy granulation tissue at all in the floor.



**Fig. 3-16** *Nonhealing ulcer* with pale unhealthy granulation tissue and slough.

4. ***Callous (stationary) ulcer:*** **It is also a *chronic* ulcer; floor contains pale unhealthy, flabby, whitish yellow granulation tissue and thin scanty serous discharge with indurated non tender edge; base is indurated, nontender and often fixed; and the *ulcer has no tendency to heal*. It lasts for many months to years. Tissue destruction is more with absence of or only minimal regeneration. Induration and pigmentation may be seen in the surrounding area. There is no/less discharge. Regional lymph nodes may be enlarged; are firm/hard and nontender (Figs. 3-17 and 3-18).**

## Classification II (Pathological)

1. ***Specific ulcers:***
   - » **Tuberculous ulcer.**
   - » **Syphilitic ulcer: It is punched out, deep, with 'wash-leather' slough in the floor and indurated base.**
   - » **Actinomycosis.**
   - » **Soft sore (Ducrey's ulcer).**
   - » **Herpes simplex ulcer, fungal ulcer, etc.**

***Note:*** **Specific ulcers may be *acute*—amoebic, typhoid; or *chronic*—tuberculous, syphilis, fungal, peptic ulcer.**

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2. ***Malignant ulcers:***
   - » Carcinomatous ulcer.
   - » Rodent ulcer.
   - » Melanotic ulcer.
3. ***Nonspecific ulcers:***
   - » ***Traumatic ulcer:*** It may be due to mechanical injury (dental ulcers in the tongue), physical (electrical burn), and chemical (alkali injury). Any trauma leading into denudation of epithelium can cause traumatic ulcer. ***Footballer's ulcer*** is a traumatic, chronic, deep ulcer in the shin.
   - » ***Arterial ulcer:*** Atherosclerosis, thromboangiitis obliterans (TAO), Raynaud's disease.
   - » ***Venous ulcer:*** Gravitational ulcer, post-phlebitic ulcer.
   - » ***Neuropathic ulcer:*** It is also called as neurotrophic ulcer. It is due to loss of sensation and often motor power. It (often) causes trophic ulcer. Main cause of neuropathic ulcer is loss of sensation in the skin and tissues. Ulcer with surrounding area is typically painless; surrounding tissue usually has normal blood supply. It indirectly causes local ischemia causing deep penetrating punched out ulcers. ***Commonest site*** is over the heads of 1st and 2nd metatarsals. It is due to both components of peripheral neuropathy—*motor neuropathy* → paralyses of small muscles of the foot → unopposed actions of long flexor tendons in the foot → shortening of the longitudinal arch of the foot → increased load on the metatarsal heads during walking; *sensory neuropathy* → loss of pain sensation → repeated unnoticed trauma → neuropathic ulcer. Neuropathic ulcer occurs as a part of peripheral neuropathy (Hansen's disease, nerve injuries, diabetes mellitus) or as a part of the spinal cord disease (spina bifida, spinal injury, tabes dorsalis, syringomyelia).
   - » ***Trophic ulcer:*** Bed sore; perforating ulcers in the sole.
   - » ***Infective ulcers:*** Pyogenic ulcer.
   - » ***Tropical ulcers:*** It occurs in tropical countries. It is callous type of ulcer, e.g. Vincent's ulcer.
   - » ***Ulcers due to*** chilblains and frostbite (***cryopathic ulcer***).
   - » ***Martorell's hypertensive*** ulcer.
   - » ***Bazin's ulcer:*** Ulcers occur in young females due to development of mild ischemia in lower leg and around ankle; it is due to significantly smaller than normal perforating arteries arising from deeper arteries in this region, causing superficial, small, multiple nodules with ulcers which are hypersensitive for temperature (blue, cold skin in cold weather; hot, edematous, painful ankle in hot weather due to reactive hyperemia). Subcutaneous fat around ankle is thick and abnormal.
   - » ***Diabetic ulcer:*** It is often progressive spreading ulcer as infection is rapid and associated ischemia worsens the ulcer early (Figs. 3-19A and B).
   - » ***Ulcers*** due to leukemia, polycythemia, jaundice, collagen diseases, lymphedema, anemia, rheumatoid arthritis, gout, vitamin deficiency.
   - » ***Cortisol ulcers*** are due to long time application of cortisol (steroid) creams to certain skin diseases. These ulcers are callous ulcers, last for long time and require excision and skin grafting.
   - » ***Factitious ulcer (artifact ulcer/man made ulcer):*** Factitious disorders are defined as acts of self harm that directly or indirectly result in clinically relevant injury. They are typically performed in secret; small objects like blade, coins, corrosives are used to inflict; but without direct intention of suicide. Such trauma induced ulcers are called as factitious ulcers; they are multiple, recurrent and superficial; evaluation for all causes of ulcer will be negative; these ulcers heal with usual ulcer treatment rapidly. It is a psychosomatic disorder; so psychiatric counseling and treatment is needed. These automutilation ulcers may be part of the Munchausen's syndrome.
   - » ***Meleney's ulcer:*** It is postoperative infection and ulcer formation in lower abdomen, perineum and often in chest wall in an immunosuppressed individuals (Fig. 3-20).
   - » ***Other ulcers:*** Ulcers can occur in vitamin deficiency, erythrocyanosis frigida, gout (increased uric acid deposition in small joints like of great toe as deposit called *tophi* which may ulcerate to form gouty ulcer), rheumatoid arthritis (nodules can break down to form




**Figs. 3-19A and B** Diabetic ulcer foot with exposed tendons, discharge and is spreading with features of ischemia.



**Fig. 3-20** Meleney's gangrene/ulcer.

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**ulcer), Paget's disease of bone, sickle cell anemia, Felty's syndrome, ulcer poliomyelitis leg, diphtheritic ulcer (*Vela sore*/cutaneous diphtheria), decubitous ulcer, iatrogenic ulcer (over intravenous cannula site, over injection site), etc. Infection in *diphtheritic cutaneous ulcer* occurs due to skin breach; initially begins as straw colored vesicles which ruptures to form a tender shallow acute ulcer to begin with; later becomes chronic. Diphtheria bacteria multiply releasing exotoxins causing dangerous carditis or peripheral neuropathy.**

### *Classification III (Wagner's Grading)*

**Grade 0—preulcerative lesion/healed ulcer.**
**Grade 1—superficial ulcer.**
**Grade 2—ulcer deeper to subcutaneous tissue exposing soft tissues or bone.**
**Grade 3—abscess formation underneath/osteomyelitis.**
**Grade 4—gangrene of part of the tissues/limb/foot.**
**Grade 5—gangrene of entire one area/foot.**

### *Classification IV (Based on Duration)*

- ***Acute ulcer:*** **Duration less than 6 weeks.**
- ***Chronic ulcer:*** **Duration more than 6 weeks.**

## HISTORY

**Name:** **Sex:**

**Age:** Certain ulcer types may be more common in certain age groups.

**Occupation:** Venous ulcers are more common in individuals whose occupation requires long hours of standing like nurses, surgeons, traffic policemen, watchmen and bus conductors.

**Place:** Tropical ulcers are common in tropical regions of Africa, India, South America whereas ulcers due to chilblains and frost bite in cold countries.

**Chief complaints:** History of ulcer and its duration should be mentioned. Asking duration is important as it determines the chronicity of ulcer. History of specific condition related also should be mentioned.

### History of Present Illness

#### *Mode of Onset and Progression*

It is the initial way of formation of an ulcer. It may be after an attack of cellulitis of the part which causes skin necrosis and later sloughs off, or after trauma which breaks the continuity of the epithelium or spontaneously due to any cause. Common cause of ulcer is trauma. Even minor trauma can cause extensive necrotizing fasciitis and ulcer later. Traumatic ulcer may heal fast or may progress into chronicity if it is on a joint or due to improper rest to the part or if patient is diabetic or due to recurrent infection, poor blood supply.

Often patient will be having the idea of the cause of ulcer. Tuberculous lymphadenitis leading into collar stud abscess eventually may form a fistula or an ulcer. Ulcerative lesion may be rodent ulcer **(Fig. 3-21)** carcinomatous ulcer or melanotic ulcer originating spontaneously. Syphilis may lead into gummatous ulcer. Ulcer may occur as a result of varicose veins due to chronic venous hypertension or arterial insufficiency as in ischemic ulcer or over pre-existing scars like of burn scar.



**Fig. 3-21** *Rodent ulcer* with destruction into bone and cartilage. It is basal cell carcinoma which is locally malignant. It erodes deeply hence the name (gnaws/eats like a rat).

Regressing or progressing of an ulcer formed in specific method is important. Acute ulcers are fast spreading in nature; chronic ulcers are slow to progress (tuberculous, gummatous, varicose ulcers, perforating ulcers). Ulcer may often heal spontaneously and reform later repeatedly in the same site, e.g. formation of an ulcer in a pre-existing burn scar or formation of venous ulcer repetitively around ankle. Here ulcer heals by rest and reforms by trauma or other precipitating causes. Such unstable long standing scar (of burns or venous ulcer) can turn into squamous cell carcinoma called as ***Marjolin's ulcer*** **(Fig. 3-22)**.



**Fig. 3-22** Typical *Marjolin's ulcer* occurring in a chronic scar. It occurs in an unstable scar of long duration; usually chronic venous ulcer, burn scar or scar after snake bite.

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If it is progressing then method of progressing is also noted. Change in size, shape, depth, discharge during progression period should be asked.

### Duration

Ulcer may be of long duration like in chronic venous ulcer or of short duration like in acute ulcer after trauma or cellulitis. Incubation period may be longer (3–4 weeks) for syphilitic Hunterian chancre; 3–4 days for chancroid. Venous ulcers usually show more than a year duration; malignant ulcers show few months duration.

### Pain

Ulcer may be painful or painless. Often malignant ulcer is painless to begin with but may eventually become painful due to secondary bacterial infection or infiltration to deeper plane or nerve ending. Some ulcers are painful to begin like *acute ulcer* **(Fig. 3-23)**, but becomes painless once it turns to chronicity. Its time of onset, progress, and severity should be asked. Trophic ulcers, syphilitic ulcer, ulcers of neurological diseases like spinal injury/spina bifida/peripheral neuropathy/tabes dorsalis, leprosy are painless. Pain may interfere with patient's daily routine activities like walking, eating, bathing, defecation, etc. Tuberculous ulcer is usually ***painless*** except on the tongue. Superficial ulcers are ***more painful*** than deep ulcers. Ulcers in the ventral aspect of the body are ***more painful*** than ulcers in the dorsal aspect of the body.

*Claudication pain in leg/thigh or rest pain* with formation of ulcer suggests ischemic ulcer may be due to atherosclerosis in elderly or thromboangiitis obliterans (TAO) in young age. Varicose vein with venous ulcer patients have evening time crampy pain in calf.

### History of Fever

Presence of fever signifies existing acute inflammation in an ulcer or in surrounding area.



**Fig. 3-23** Ulcer over lateral margin of the tongue due to dental injury. It is an *acute ulcer.*

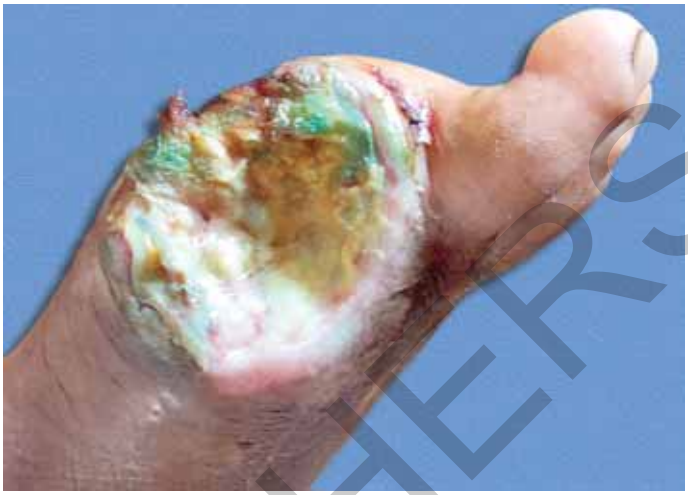

**Fig. 3-24** Green discharge in ulcer suggests *Pseudomonas* infection.

### Discharge from Ulcer

Whether ulcer is having discharge or not is asked and also its duration. Discharge can be also assessed by looking at the dressing pads. The quantity of discharge is enquired. Discharge may be profuse, scanty or absent. Patient often gives history of the quantity of dressing pads soaked and its color. Color and smell of the discharge is important. Whether discharge is serous or purulent which often indicates the type of bacterial infection involved is also important to be noted; like in Pseudomonas infection the discharge is greenish in color **(Fig. 3-24)**.

### Number of Ulcers

Often ulcers can be ***multiple*** **(Figs. 3-25 and 3-26)**. If it is so, which ulcer developed first and which one later should be asked.



**Fig. 3-25** Multiple ulcers all over the body in a malnourished immunosuppressed individual.

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**Fig. 3-26** Multiple ulcers in the scrotum.

### *Associated Symptoms*

History of presence of varicose veins; claudication, rest pain of arterial insufficiency should be asked for. Features suggestive of chronic renal failure [CRF/CKD (chronic kidney disease)], tuberculosis, diabetes mellitus, spinal trauma/diseases (transverse myelitis, syringomyelia), Hansen's (leprosy) disease, AIDS, systemic malignancies should be asked. History of edema, deformity and loss of function of the part/limb should be asked for.

*History of loss of sensation* in feet from distal to proximal is typical of neuropathy which may be caused by diabetes mellitus (commonest cause), leprosy and peripheral neuropathy of other causes like vitamin deficiency. In sickle cell disease, there will be jaundice with recurrent ulcers in leg (over the shin). *Recurrent ulcerations* often multiple may be due to drug induced (reactions) or may be related to certain dermatological conditions.

## Past History

***Past history of ulcer*** treated by dressing/drugs/skin grafting/hospital stay should be asked in detail. Number of days hospitalized, time taken up for healing of the ulcer should be noted. Previous history of treatment for tuberculosis, syphilis, diabetes, hypertension, leprosy, neurological diseases, sickle cell disease (anemia) or any other illness is important.

***History suggestive of associated disease/treatment*** history like for tuberculosis, tabes dorsalis, spinal diseases or diabetes mellitus has to be asked. If patient is on treatment for any of such ailment, type of drugs taken, dose and method of intake should be asked.

***Whether the patient was on any steroid cream*** for long duration has to be asked as callous ulcer are common in these patients.

***Past history of surgery*** like tumor wide excision (removal of tumor), its detail, which year and which hospital, result/outcome, biopsy report if any; any further treatment taken like radiotherapy or chemotherapy or antituberculous drug therapy or treatment for leprosy; name of drugs, doses, side effects; recovery should be asked for in detail. Past history of toe(s) amputation(s) on one or both feet and if so details of it; it is common in diabetic foot.

## Personal History

History of alcohol consumption/smoking/tobacco chewing/history of sexual contact/dietary habits are also important. Duration of such habits, quantity should be asked for. It has got direct relation to ulcer formation or ulcer healing or treatment strategy. *Altered appetite or weight loss* can also be mentioned under personal history—may be due to advanced malignancy or tuberculosis.

## Family History

Family history of any specific disease (tuberculosis, leprosy, hypertension, diabetes mellitus, varicose veins) should be asked.

# GENERAL EXAMINATION

Doing a detailed general examination is very essential. Presence of anemia/edema/jaundice/clubbing/lymphadenopathy/raise in temperature/attitude of the patient/nutritional assessment by skin texture, subcutaneous fat, weight, body mass index/any other relevant findings should be mentioned. Rate and volume of radial pulse/palpation of all peripheral pulses/blood pressure should be noted. Malignant tumor infiltrating nerves or ulcer with a chronic scar or large chronic ulcer or painful acute ulcer can alter the attitude of the limb. Increased pulse rate and temperature suggests ulcer with acute inflammation. Features suggestive of tuberculosis, vascular disease, spinal disease, syphilis or neurological diseases should be looked for.

# LOCAL EXAMINATION OF AN ULCER

## Inspection (Figs. 3-27A and B)

### *Site of an Ulcer*

**Common sites for different ulcers**

| | |
|---|---|
| Trophic ulcer (perforating ulcer) | Heel and ball of feet |
| Tuberculous ulcer | Neck, axilla, groin |
| Gummatous ulcer | Sternum, skull, tibia |
| Traumatic ulcer | Leg commonly |
| Rodent ulcer | Face—Above the line joining the angle of the mouth and ear lobule |
| Arterial ulcer | Toes, fingers, feet, legs |
| Venous ulcer | Around ankle (gaiter's area) |
| Neuropathic ulcer | Heads of 1st and 2nd metatarsals |

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***Salient Features***

- *SRB's Clinical Methods in Surgery*, fourth edition is the updated part of third edition with lots of additions and corrections.
- It covers in detail clinical examination in various surgical areas and conditions with reasons and analysis. Basic general examinations are discussed properly with illustrations as often students find it difficult to understand. Enough photographs and illustrations are added.
- All chapters are thoroughly edited, and proper photographs and diagrams are added. Each chapter contains clinical examination methods, investigations, brief outline about all the conditions, which are relevant surgically. In selected chapters, where students are given cases during examinations, such topics are discussed in the form of case discussion so that students can have idea how exactly examination questions are asked in clinical side. In a few chapters, clinical pearls are added as a surgical wisdom which is important while treating the surgical patient.
- Chapters on Instruments, X-rays and Specimens at the end is for quick look to all students especially during surgery practical examination.
- This book is made to concentrate in detail on clinical examination methods of every surgical area with adequate clinical photographs with analysis and reasoning so that students can be very well-versed in clinical methods and final diagnosis. All surgical topics are precisely highlighted at the end of each chapter for review whenever needed.
- Added QR codes for videos showing how to examine a particular patient (common surgical cases) clinically is shown with a voice background which will be very useful to students while examining the particular patient.
- This clinical book will be useful to undergraduates, postgraduates of MBBS and MS as well as useful to Ayurveda and allied medical fields; it is also useful for practicing clinicians to have a quick review.



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