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THE MRCS MODULE 2016

Questions with Explanations for MRCS

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MRCS Surgery 1-121
(Questions and Answers with Explanations)

MRCS Surgery

1. A vascular surgeon identifies a vessel which begins at the outer border of the 1st rib as a continuation of the subclavian artery and ends at the lower border of the teres major by becoming the brachial artery. The vessel is the:

A. Costocervical trunk
B. Radial artery
C. Ulnar artery
D. Axillary artery

Ans. D. Axillary artery

Explanation: Axillary artery begins at the outer border of the 1st rib as a continuation of the subclavian artery and ends at the lower border of the teres major by becoming the brachial artery. The pectoralis minor muscle divides the artery into three parts.

1. The 1st part above it
2. The second part behind it
3. The third part below it.

Ist part: gives (1) Superior thoracic artery
2nd part: gives (2) Thoracoacromial and lateral thoracic arteries
3rd part: gives (3) Anterior circumflex humeral, posterior circumflex humeral and subscapular arteries

2. In the cubital fossa an orthopedic surgeon identifies a vessel elbow just medial to tendon of biceps. The vessel is the:

A. Profunda brachii artery
B. Radial artery
C. Ulnar artery
D. Brachial artery

Ans. D. Brachial artery

Explanation: Brachial artery:

- Extends from lower border of teres major muscle to elbow just medial to tendon of biceps. The pulsations of brachial artery are auscultated for blood pressure measurement.

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Branches of brachial artery:
- Muscular branches
- Profunda brachii artery with its branches: Anterior descending, posterior descending and ascending branch
- Superior ulnar collateral
- Inferior ulnar collateral
- Nutrient artery to humerus
- Terminal branches: Ulnar and radial.

3. A surgeon notices a swelling in the Axilla. On detailed examination and investigation it is found to be a component of normal breast tissue extending to the Axilla. The most likely swelling is the:

A. Axillary tail of Spence
B. Lake of Styles
C. Milk line
D. Subareolar plexus of Sappey

Ans. A. Axillary tail of Spence

Explanation: Remember the correct points

The superolateral quadrant is prolonged towards the axilla along the inferolateral edge of pectoralis major, from which it projects a little, and may extend through an opening in the deep fascia (Foramen of Langer) up to the apex of the axilla (Axillary tail of Spence).

The breast lies upon the deep pectoral fascia, which in turn overlies pectoralis major and serratus anterior. Between the breast and the deep fascia is loose connective tissue in the 'submammary space'.

The nipple projects from the center of the breast anteriorly. It lies at the fourth intercostal space in most young women.

The areola is a darkly pigmented area of skin, which circles the base of the nipple.

Montgomery's tubercles: These are sebaceous glands underlying the areolar skin which enlarge during pregnancy and lactation.

The subareolar plexus of Sappey is a collection of large lymph vessels situated under the areola and is not to be considered as a collecting zone of lymph and it communicates with the lymphatics of the breast tissue.

Lake of Stiles: Plexus of lymph situated on anterior sheath (deep fascia) of pectoralis major is called Lake of Stiles.

It receives lymphatic communications from subareolar plexus of Sappy.

4. On charting the lymphatic territory of breast it would be seen that the lymphatic from left upper quadrant of breast drain into following, except:

A. Anterior axillary
B. Central
C. Apical
D. Parasternal

Ans. D. Parasternal

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Explanation: The lymphatic drainage of the breast is rich.

The major site of drainage is to central axillary nodes. The internal mammary and interpectoral nodes, although primary routes of lymph flow, are rarely the sites of nodal metastasis from breast cancer in the absence of simultaneous axillary disease.

Secondarily, the lymphatic spread of cancer is into the high axillary nodes in the subclavicular chain and henceforth into the supraclavicular fossa.

The lymph node groups are assigned levels according to their anatomic relationship to the pectoralis minor muscle.

Lymph nodes located lateral to or below the lower border of the pectoralis minor muscle are referred to as level I lymph nodes, which include the axillary vein, external mammary, and scapular groups.

Lymph nodes located superficial or deep to the pectoralis minor muscle are referred to as level II lymph nodes, which include the central and interpectoral groups.

Lymph nodes located medial to or above the upper border of the pectoralis minor muscle are referred to as level III lymph nodes, which consist of the subclavicular group.

The plexus of lymph vessels in the breast arises in the interlobular connective tissue and in the walls of the lactiferous ducts and communicates with the subareolar plexus of lymph vessels.

Efferent lymph vessels from the breast pass around the lateral edge of the pectoralis major muscle and pierce the clavipectoral fascia, ending in the external mammary (anterior, pectoral) group of lymph nodes.

Some lymph vessels may travel directly to the subscapular (posterior, scapular) group of lymph nodes.

From the upper part of the breast, a few lymph vessels pass directly to the subclavicular (apical) group of lymph nodes.

The axillary lymph nodes usually receive > 75% of the lymph drainage from the breast.

The rest is derived primarily from the medial aspect of the breast, flows through the lymph vessels that accompany the perforating branches of the internal mammary artery, and enters the parasternal (internal mammary) group of lymph nodes.

5. A student preparing for MRCS examination should know that the correct statement among the following is:

A. Breast is an infrequent site of carcinoma

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B. Approximately 60% of them occurring in lower lateral quadrant
C. Contraction of the suspensory ligaments can cause puckering of the skin
D. Infiltration of and their consequent fibrosis can cause eversion of the nipple

Ans. C. Contraction of the suspensory ligaments can cause puckering of the skin.

Explanation: Breast is a frequent site of carcinoma.

Approximately 60% of them occurring in upper lateral quadrant.

Cancer cells may infiltrate the suspensory ligaments. The breast then becomes fixed. Contraction of the ligaments can cause puckering of the skin.

Infiltration of lactiferous ducts and their consequent fibrosis can cause retraction of the nipple.

Because of communications of the superficial lymphatics of the breast across the midline, cancer may spread from one breast to the other, and to the opposite axillary nodes as well.

Entrance of cancer cells into the blood vessels accounts for metastasis in the distant bones.

6. A 26-year-old lactating mother has a 2. 5 cm red, hot, tender mass in the right breast near the areola. There is purulent discharge from the nipple. Lab investigations reveal leukocytosis. Most likely cause is:

A. Breast papilloma
B. Breast abscess
C. Lipoma breast
D. Fibroadenoma

Ans. B. Breast Abscess

Explanation: Breast abscesses are typically seen in lactating mothers with poor breast hygeine. They present with point tenderness, erythema, and hyperthermia. These abscesses are related to lactation and occur within the first few weeks of breastfeeding. They made respond to antibacterial therapy but in severe cases preoperative ultrasonography is effective in delineating the required extent of the drainage procedure, which is best accomplished via circumareolar incisions or incisions paralleling Langer's lines. Staphylococcus aureus is often the most common agent.

7. A 58-year-old female has noticed a 2.5 cm swelling in her right breast with ill defined borders and not mobile. On examination of the axilla there is axillary lymphadenopathy The skin overlying has orange peel appearance. Most likely cause is:

A. Malignancy Breast
B. Breast Abscess
C. Lipoma Breast
D. Fibroadenoma

Ans. A. Malignancy Breast

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Explanation: This is a classic description of a malignant lesion of breast. This elderly (58-year-old female) has routinely noticed a 2.5 cm swelling in her right breast with features suggestive of a malignant growth (ill defined borders) and not mobile (indicating fixity to underlying skin). On examination of the axilla there is axillary lymphadenopathy. (Indicating an advanced lesion). The skin overlying has orange peel appearance. (Indicating spread to cutaneous lymphatics).

8. A 16-year-old female has firm, rubbery mass in right breast moving with palpation. There is no lymphadenopathy. There is cyclic mastalgia. The most likely cause is:

A. Malignancy breast
B. Breast abscess
C. Lipoma breast
D. Fibroadenoma

Ans. D. Fibroadenoma

Explanation: Fibroadenomas are benign lesions and are seen predominantly in younger women aged 15 to 25 years. Fibroadenomas usually grow to 1 or 2 cm in diameter and then are stable but may grow to a larger size. This Young (16-year-old female) has firm, rubbery mass in right breast moving with palpation (nonfixity). There is no lymphadenopathy. (satisfying sign) There is cyclic mastalgia. (Can be a normal feature or premenstrual tension).

9. The breast carcinoma with worst prognosis is:

A. Serrous carcinoma
B. Colloid carcinoma
C. Papillary carcinoma
D. Inflammatory carcinoma

Ans. D. Inflammatory carcinoma

Explanation: Papillary carcinomas are usually ER positive and have a favorable prognosis.

The 30 year survival rate of women with tubular, papillary, medullary carcinomas is greater than 60%. Breast cancer may arise from the epithelium of the duct system anywhere from the nipple end of major lactiferous ducts to the terminal duct unit which is in the breast lobule. It may be entirely in situ—an increasingly common phenomenon with the advent of breast cancer screening—or may be invasive cancer. The degree of differentiation of the tumor is usually described by three grades—well differentiated, moderately or poorly differentiated. Ductal carcinoma is the most common variant, but lobular carcinoma occurs in up to 10 per cent of cases, although this may be mixed.

Rarer histological variants, usually carrying a better prognosis, include colloid carcinoma whose cells produce abundant mucin, medullary carcinoma with solid sheets of large cells often associated with a marked lymphocytic reaction

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and tubular carcinoma. Invasive lobular carcinoma is commonly multifocal and/or bilateral.

Inflammatory carcinoma is a highly aggressive cancer which presents as a painful, swollen breast, which is warm with cutaneous edema. This is due to blockage of the subdermal lymphatics with carcinoma cells. Inflammatory cancer usually involves at least one-third of the breast and may mimic a breast abscess. Involvement of subdermal lymphatics is a feature Peau D'Orange appearance is characteristic. It mimics breast abscess.

10. An anatomy student would find that the median nerve arises from:

A. Medial cord of brachial plexus
B. Lateral cord of brachial plexus
C. Medial and lateral cord of brachial plexus
D. Medial and posterior cord of brachial plexus

Ans. C. Medial and lateral cord of brachial plexus

Explanation:

- Nerves from roots
- Dorsal scapular nerve (Nerve to rhombiodis) C5
- Nerve to serratus anterior C5, 6, 7
- Nerves from medial cord
- Medial pectoral nerve C8, T1
- Medial cutaneous nerve of arm T1, T2
- Medial cutaneous nerve of forearm C8, T1
- Medial root of median nerve C8, T1
- Ulnar nerve C7, C8, T1
- Nerves from lateral cord
- Lateral pectoral nerve C5, C6, C7
- Lateral root of median nerve C5, C6, C7
- Musculocutaneous nerve C5, C6, C7
- Nerves from posterior cord
- Axillary nerve C5, C6
- Radial nerve C5, C6, C7, C8, T1
- Nerve to latissimus dorsi C6, C7, C8
- Upper and lower subscapular nerve C5, C6

11. A child suffered an injury after birth which was caused by forceful downward traction of shoulder with lateral displacement of head to the other side causing the hanging of arm by the side and extension of elbow. Most likely deformity is:

A. Erb's palsy
B. Klumpkes palsy
C. Pulled elbow
D. Saturday night palsy

Ans. A. Erb's palsy

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Explanation: Erb's point: Union of six nerves namely C5, C6, suprascapular nerve, nerve to subclavius, anterior and posterior division. Damage to it results in Erb's paralysis. (Policeman's tip).

Erbs Palsy: Lesion of upper trunk of brachial plexus (C5, C6) caused by forceful downward traction of shoulder with lateral displacement of head to the other side.

- The deformity causes:
  - Hanging of arm by the side
  - Extension of elbow
  - Pronation of forearm
  - Flexion of wrist.

12. A child suffered an injury after birth which was caused by forceful upward traction of arm causing injury to lower trunk of brachial plexus causing claw hand deformity. Most likely cause is:

A. Bells palsy
B. Klumpkes palsy
C. Pulled elbow
D. Saturday night palsy

Ans. B. Klumpkes palsy

Explanation: Klumpkes palsy:

- Lesion of lower trunk of brachial plexus (C8, T1) caused by forceful upward traction of the arm.
- The deformity causes:
  - Claw hand
  - Sensory loss on ulnar side of forearm
  - Horners syndrome.

13. An elderly alcoholic after heavy bout of drinking fell asleep with his arm hanging over back of chair. When he woke up in the morning he could not extend his wrist. Most likely cause is:

A. Monday chest palsy
B. Klumpkes palsy
C. Porter's tip deformity
D. Saturday night palsy

Ans. D. Saturday night palsy

Explanation: Saturday night palsy:

- Due to prolonged pressure on radial nerve in the spiral groove of humerus, there is radial nerve palsy after consuming liquor on weekends (especially saturdays) when patient falls asleep with his arm hanging over back of chair.
- In the morning he suffers from radial nerve damage particularly wrist drop.

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14. A surgeon would be correct to say that radial nerve:

A. Is a branch of lateral cord of brachial plexus
B. It is commonly injured in injury to lower part of humerus
C. Root value of radial nerve is: C3, C4
D. It is injured in intramuscular injections in arm

Ans. D. It is injured in intramuscular injections in arm

Explanation: Radial Nerve:

- It is a branch of posterior cord of brachial plexus
- Root value is: C5, C6, C7, C8, T1
- It is commonly injured in fracture shaft of humerus, intramuscular injections in arm.

It supplies:

- Triceps
- Anconeus
- Brachioradialis
- Lateral part of brachialis
- Brachioradialis
- Extensor carpi radialis longus.

Cutaneous branches:

- Lower lateral cutaneous nerve of arm
- Posterior cutaneous nerve of arm
- Posterior cutaneous nerve of forearm.

Lesion in spiral groove causes:

- Wrist drop
- Loss of supination
- Triceps is spared.

Lesion below elbow causes:

- Wrist drop
- Loss of supination
- Sensory loss on lateral part of dorsum of hand.

15. A 26-year-old pregnant patient developed intense pain and paresthesia in the distribution of median nerve in her right hand. Next morning she was unable to perform her typing job. Tinel's test was reported positive. The most likely cause is:

A. Wrist drop
B. Tenosynovitis
C. Claw hand
D. Carpal tunnel syndrome

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The MRCS Examination is an integral part of the early years' training program and is a requirement for progression to higher surgical training in the United Kingdom together with a satisfactory progression of training evaluated using the workplace-based assessments in the trainee's Annual Review of Competency Progression (ARCP).

This book has been prepared with the aim of securing a good score in the examinations and to develop a concept for further examinations. This project is a special effort on the author's part to help the students preparing for the MRCS Examinations.

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