**Ballistic and firearm injury**

Rifled weapons possess rifling bores which makes the bullet faster and penetrates more.

Muzzle loaders- loaded from the muzzle.

Breech holders- loaded from the breech.

**Non-rifled weapons (shots and wads)**

Black powder will make the wound black, however the smokeless powder makes it grey.

In the sporting gunshots you can find the inner wad, the shots, and the outer wad in the dead body depending on the distance.

The inner wad goes to a longer distance than the outer wad because it’s heavier than the outer wad.

*Gaffer guns:* the diameter of the greener is bigger than the Schneider, and the Schneider is bigger than the Remington.

In the booklet the meaning of the bore is: every pound makes 12 bullets of greener, 16 of Schneider, 28 of Remington.

If a person was shot with no inner or outer wad, then he was shot at a distance of more than 3 meters.

If someone was shot from a near distance and there was only the inner wad and no outer wad, then was shot with Schneider or Remington gaffer

**Rifled weapons (bullets)**

The automatic:يطلع الظرف بنفسه

Non automatic: الرامي يطلع الظرف

*Types of cartridge in rifled weapons:*

***Revolver cartridge: (short rifles, pistols)***

-old(non jacketed): black coloured.

-new(jacketed):red coloured, it is jacketed(covered with nickel) to make it stronger and so it doesn’t fragmentize.

There is a rim at the base as it is not automatic

***Automatic pistol cartridge:***

There is a groove at the base as it is automatic

**Estimation of distance of firing**

Powder marks:

BL= barrel length

Gases cause laceration and tearing: 15 cm

Flame causes burns: 0.5 BL

Smoke leads to blackening: 1-1.5 BL

Unburned particles cause tattooing: 2-3 BL

**Medicolegal importance:**

Also to differentiate between weapons.

In short distance firing the inlet is everted (cross shape) and lacerated 0-15 cm.

*Point blank firing*: the most important sign is cross shaped inlet IMP.

*Contact firing*: the inlet is everted. The most important sign is the burn taking the shape of the muzzle IMP.

**Products of firing a gun:**

-flash of light

-gases

-flame

-smoke

-unburned powder particles

-shots&wads or bullets depending on rifled or non-rifled guns.

**Firearm injury:**

*Characters of firearm wounds:*

The most important character in the inlet is the powder marks IMP.

In beveling the exit wound is bigger than the inlet wound and there is internal beveling in the inlet and external beveling in the exit.

*Factors affecting the shape of the wound:*

The most important sign of the factors is the distance of firing IMP.

The closer the distance the more the chance for the bullet to be retained.

The loss of substances is more in the inlet due to bigger force and velocity.

**Legal types of injuries:**

*Examination of the victim*:The most important sign in suicide is cadaveric spasm.

*Examination of the wound:* The most common sites of wounds in suicide are:

1. Roof of mouth most common IMP
2. Right&left temple
3. Precordium
4. Abdomen

**MCQs**

1. In oblique firing, the inlet is ((I guess it has the same meaning of slanting)) :

A) Rounded

B) Oval\*\*\*

C) Surrounding by powder marks

D) Large than exit

2. which of these characters are found in inlet of far firing :

A) Tattooing

B) Loss of substance\*\*\*

C) Everted edge

D) Burn

3. A lady was shot by a revolver at a distance of 2m , inlet would be :

A) Inverted edge\*\*\*

B) Large than exit

C) Blackened

D) Regular in shape

4. the inlet of contact in firearm injury is best described by the presence of :

A) Inverted edge

B) Everted edge caused by gases

C) Muzzle shaped burning\*\*\*

D) Minimal powder markers

5. beveling of bones caused by :

A) Bullets\*\*\*

B) Powder markers

C) Contact firing

D) Gases

6. powder markers are most helpful in Dx of :

A) Type of weapon

B) Homicidal death

C) Suicidal death

D) Direction of firing

E) differentiate between Inlet + exit\*\*\*

7. an inlet of a bullet in the skull shows:

A) inverted edge

B) internal beveling\*\*\*

C) soiling ring

D) external beveling

E) everted edge

8. the following are found in inlet of far firing except:

A) powder marks\*\*\*

B) loss of substances

C) soiling ring

D) inverted edge

E) interval beveling

9.characters of firearm injuries are:

A) loss of substance

B) powder marks

C) inlet & exit

D) bevelling of flat bones

E) all of the above\*\*\*

10.the following are found in exit of firearm except:

A) loss of substance

B) everted edge

C) powder marks\*\*\*

D) irrigular edge

E) external beveling

All of them are true BUT

Powder marks is the MOST IMPORTANT

11.Rifling marks are present on:

A) shots

B) internal wad

C) external wad

D) bullet\*\*\*

E) all of the above

12.tattooing is caused by:

A) hot gases

B) smoke

C) flame

D) shots

E) unburnt powder particles\*\*\*

13. which of the following best describe non automatic service rifle cartridge :

A) Fire bullet

B) Long rifled cartridge

C) Has a rim at the base\*\*\*

D) Has groove at the base

14. A man was shot by Remington gun at a distance of 1 m , x-ray will show :

A) Rounded shouts

B) Rounded shouts & outer wad

C) Semi cubical shouts

D) Semi cubical shouts & inner wad\*\*\*

15. Outer wad enters the body at the distance of :

A) 50 cm\*\*\* (up to 1 m)

B) 2m

C) 3m

D) 5m

E) 10m

16.Greener guns are :

A) Non rifled weapon\*\*\*

B) Long non rifled weapon

C) Fire shots

D) Long rifled weapon

17.The automatic service rifle weapons :

A) Long rifled\*\*\*

B) Fire bullets

C) Fire shots

D) Rifled weapon

18. which guns fire semi cubical slugs :

A) Greener

B) Revolvers

C) Sporting

D) Schneider\*\*\*

19.Which one of the following are non-rifled:

A) revolvers

B) automatic pistols

C) police weapon

D) sporting guns \*\*\*

E) military weapons

20. The main function of percussion cap is:

A) To separate shots from powder

B) To produce a spark\*\*\*

C) To keep shots in place

D) To produce unburnt particles

E) To act as a piston for the shots

21. Sporting gun:

A) A long rifle weapon.

B) A short rifle weapon.

C) A long non-rifle weapon. \*\*\*

D) Firing bullets.

22. which of the following is incorrect regarding the contact wound produced by a bullet on the head ?

a) stellate or cruciate tearing of skin

b) ragged margins

c) inverted margins \*\*\*

d) lacerated margins

e) a + d

big thanks to: Mona Alfaraidi

if there are any notes contact me

[b.m.assery@gmail.com](mailto:b.m.assery@gmail.com)

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