SERVIZIO SANITARIO REGIONALE
EMILIA - ROMAGNA
Istituto Ortopedico Rizzoli di Bologna
Istituto di Ricovero e Cura a Carattere Scientifico

FIRST AID ON THE TRACK

ROLE OF THE MOBILE CLINIC

F.Trentani,
M.Corbascio, C.M.Costa

INTRODUCTION

In the world speed championship Italy is the first country with the highest number of wins and titles

(up to 2007, 687 G.P wins and 72 world titles)


HAYATE

INTRODUCTION

Motorcycle racing is the third most popular sport after soccer and F1.

Sponsors are looking for motorcyclists for promotion

Increase in fairs, events and purchases

INTRODUCTION

- Increase in competitions
- Increase in riders
- Increase in financial interest
- Increase in accidents and injuries

CREDIT: ERIC LARS BAKKE / ESPN

INTRODUCTION

The MOBILE CLINIC is defined as a roaming hospital for motorcyclists by its inventor and founder DR. CLAUDIO MARCELLO COSTA

INTRODUCTION

The role of the MOBILE CLINIC is therefore that of providing and supporting first aid on the track, by setting up a close healthcare network with local Medical Centers during competitions and taking care of riders until they are ready to race again


EXIT
Honda Racing
DIADORA
AXO

INJURY

A lesion produced by an external agent by violent action, in mechanical, thermal, electrical, chemical, light, pressure and radioactive terms. The injury occurs when the intensity of the agent exceeds the strength of the tissue, thus producing an open or closed lesion


HONDA
LifeLock

INJURY

Injury is the third most common cause of death after cardiovascular diseases and cancer and the first among people aged between 20 and 30 years old in Italy

120 deaths per 100,000 citizens per year

(road, home, work)

INJURY

Injury occurs in 3 time scales:

① In seconds/minutes: due to brain, spinal cord, heart and aorta lesion

② In 1-4 hours: due to hemorrhage, pneumothorax, liver or spleen rupture

③ In weeks or months: due to sepsis or multiorgan failure syndrome.

INJURY

Time is a fundamental element in injury treatment.

In fact, the time it takes the injured patient to be assessed, treated on the field and taken to a suitable hospital is defined as the “Golden Hour”


MEDICAL
2010
DOCTOR

INJURY

Often on the road and on the track multiple injuries occur


CAME
AUTOMATIC
GATES
CAME
AUTO
GA


CAME
AUTOMATIC
GATES
CAME
AUTOMATIC
GATES
AMBULANCE

INJURY

therefore three levels of assessment can be identified:

Level 1: at the scene of impact. It is decided if the patient needs immediate transport to hospital (scoop and run) or if the injury can be first stabilized on site (stay and play)

Level 2: secondary intervention even diagnostic outside or inside hospital.

Level 3: treatment and assessment in hospital.


I-ORAO
Premier Suction Unit

INJURY

CONTUSION: injury caused by a direct low-energy trauma

- ABRASION: break in the surface of the epidermis
- EXCORIATION: break in the skin down to the dermis
- ECCHYMOSIS: collection of blood without break in the skin and subcutaneous tissue
- HEMATOMA: abundant collection of blood that can detach tissues
- NECROSIS: deep lesion with tissue breakage


If you have skin... you need
Santander
CONSUMER BANK
FIMER
YAMAHA
YAMAHA
YAMAHA

INJURY

DISTORTION: joint injury due to abnormal stimulation of the supporting elements.

GRADE I: ligament stretching

GRADE II: partial ligament laceration

GRADE III: total ligament laceration of the joint can cause hydrarthrosis or hemarthrosis


PANDORA SPA
www.pandoraenergia.com

INJURY

MUSCLE LESION: direct injury to the muscle.

MUSCLE CONTUSION: formation of hematoma or necrosis and emission of necrotic toxic substances into the circulation.

MUSCLE WOUND: with tissue breakage caused by a sharp point, cut or lacerating-contusion event.

RUPTURE: due to hypercontraction occurring at the myotendinous junction.

MUSCLE HERNIA: lesion of the fasciae that surround the muscle with consequent protrusion of the muscle belly.


STANLEYS

INJURY

DISLOCATION: permanent loss of alignment between the articular heads than may occur postero-laterally, antero-posteriorly or medio-laterally.

They are divided into:

CLOSED and OPEN

WITH or WITHOUT FRACTURE

ACUTE, INVETERATE and RECURRING


89·3

INJURY

The most common SITES:

SHOULDER

HAND

(PHALANGES)

ELBOW

KNEE

HIP

INJURY

They cause:

NEURAL

VASCULAR

damage

INJURY

FRACTURE : Breakage of a bone segment due to mechanical causes


46
YAMAHA


alpinestars


CEA
MEDICAL
DOCTOR


406
TRACK
MEDICAL
DOCTOR


DOCTOR

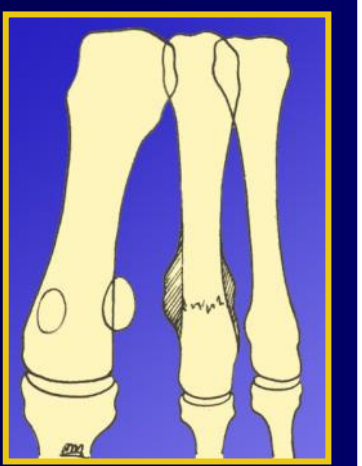

MEDICAL
2010
ITALY

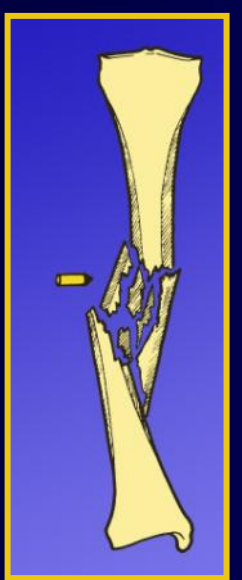
INJURY

CLASSIFICATION - ACCORDING TO INJURY

BY ENERGY

- LOW ENERGY
- HIGH ENERGY (fall from a height)
- DURATION or STRESS (pneumatic drill)
- HIGH SPEED (bullet)





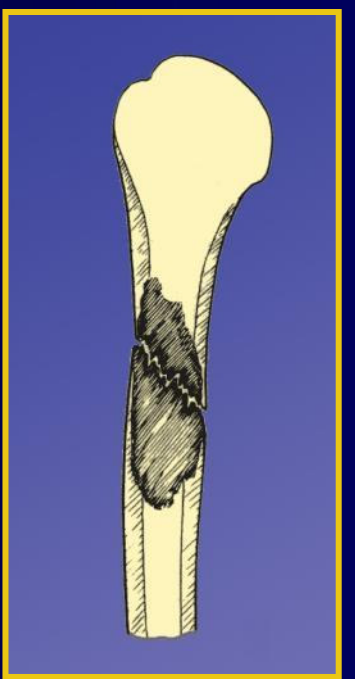
INJURY

- TRUE

(injury of energy higher than the flexibility and mechanical limits of the bone)

- PATHOLOGICAL

(low energy injury, that can cause fractures in diseased bone)

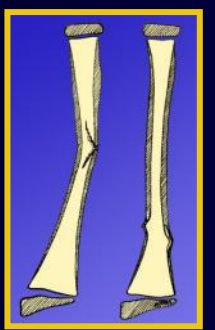


INJURY

- INCOMPLETE

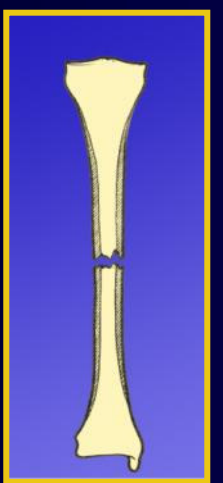
bone cracks almost without laceration of the periosteum
greenstick

(these occur in childhood due to greater flexibility of the bone)



- COMPLETE

(the breakage of the bone segment is complete)



INJURY

CLASSIFICATION - ACCORDING TO INJURY

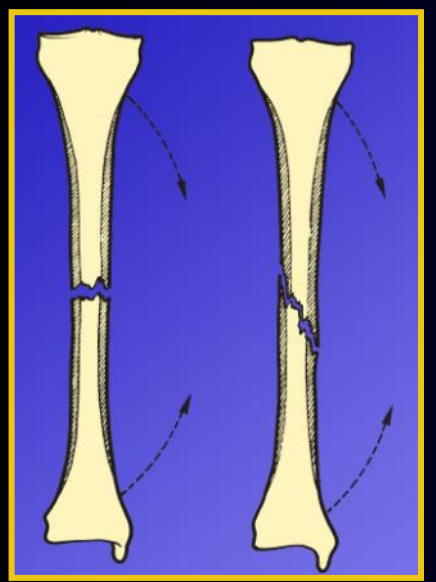
BY SITE

- DIRECT (injury and fracture same site)

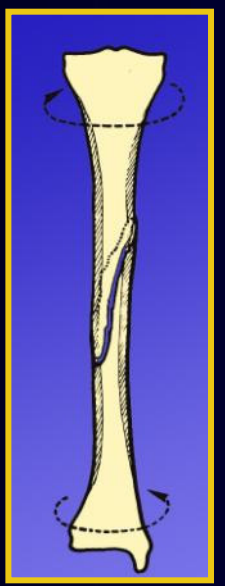
- INDIRECT (injury and fracture in different sites)

INJURY

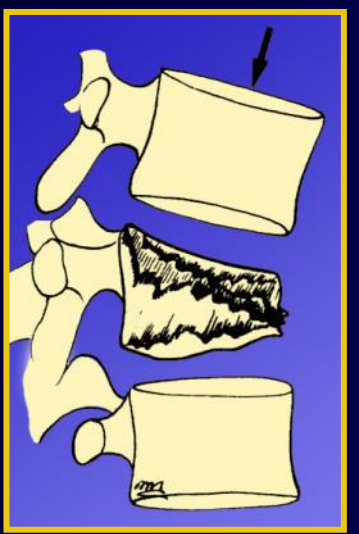
MECHANISM OF INDIRECT INJURY



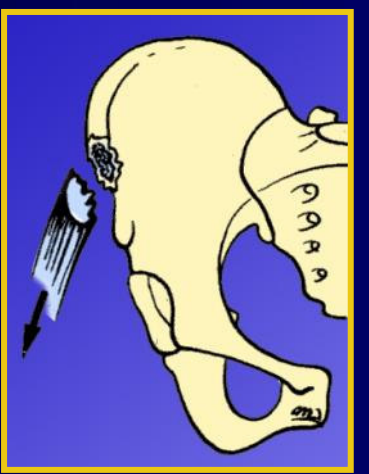
FLEXION



TORSION



COMPRESSION



AVULSION or TEAR

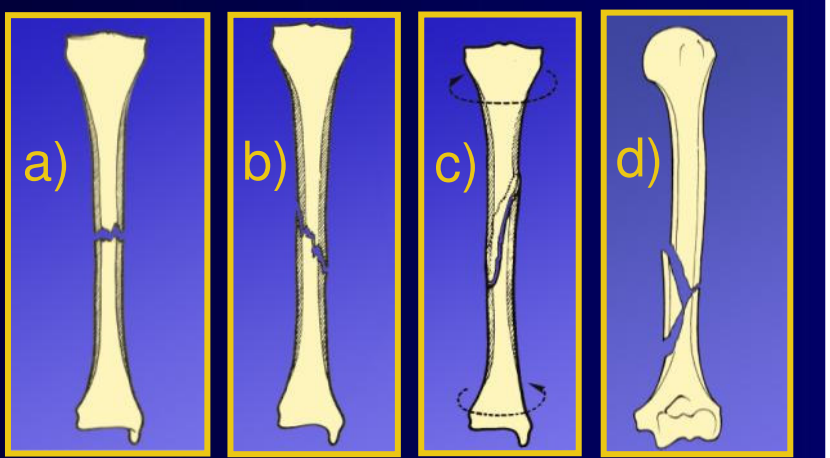
INJURY

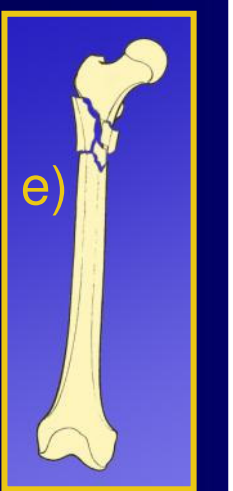
CLASSIFICATION - BY FRACTURE FORM

a) TRANSVERSE
(perpendicular to the bone axis)

b) OBLIQUE
(oblique to the bone axis)

c) SPIRAL
(around the axis of the bone; due to torsion injury)





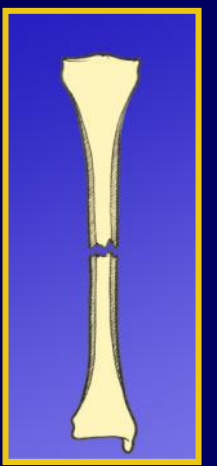
d) CUNEIFORM (with the formation of a 3rd fragment)

e) COMMINUTED (with the formation of multiple fragments)

INJURY

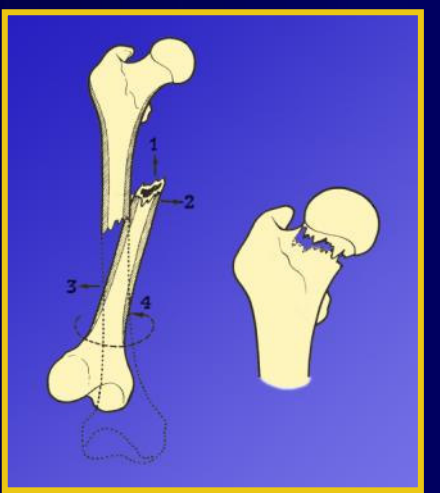
CLASSIFICATION - ACCORDING TO ALIGNMENT BETWEEN THE FRACTURE ENDS

- COMPOSED (perfect alignment between the fracture ends)



- IMPACTED (one fracture end is driven into the other)

- DISPLACED (misalignment between the fracture ends)



INJURY

CLASSIFICATION - ACCORDING TO RELATIONSHIP WITH The SKIN

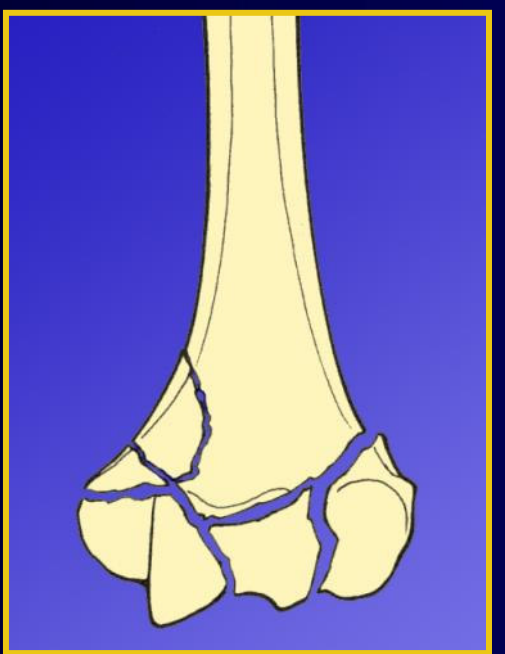
- CLOSED (a broken bone has lacerated the soft tissues but has not protruded through the skin)

- OPEN (a broken bone has lacerated the soft tissues and is open through the skin)

INJURY

JOINT FRACTURES

(these are fractures where the fracture line is in contact with a joint cavity; the hemorrhage causes hemarthrosis; they may be combined with tendon and ligament lesions and dislocation; they may develop into bone necrosis)



INJURY

COMPLICATIONS

GENERAL

LOCAL

INJURY

GENERAL COMPLICATIONS

- IMMEDIATE

TRAUMATIC SHOCK

(lack of blood perfusion with tissue anoxia)

a) Hemorrhage (internal or external)

b) Loss of plasma (sores and crushing)

c) Resorption of histamine-like substances

d) Neural reflexes of nociception

Compensatory shock (blood recall)

Manifest shock (insufficient output)

Urgent therapy (volume repletion)

INJURY

GENERAL COMPLICATIONS

- EARLY

FAT EMBOLISM (introduction of adipose droplets into the bone blood circulation)

a) Obliteration of the pulmonary capillary reticulum

b) 24-48 hours after injury clinical symptoms (petecchiae)

c) Radiographic findings “snowflake”

Therapy with corticosteroids

THROMBOEMBOLISM

a) Phlebothrombosis

b) Thrombophlebitis

Therapy with anticoagulants, antibiotics

INJURY

GENERAL COMPLICATIONS

- LATE

DUE TO IMMOBILIZATION

a) Joint stiffness

b) Urinary stagnation

c) Bedsores

d) Osteoporosis

e) Bronchopneumonia

INJURY

LOCAL COMPLICATIONS

- IMMEDIATE

NEURAL

a) Due to: compression

irritation

interruption

b) Clinical proportionate to the damaged nerve

Common examples: radial nerve

sciatic nerve

brachial plexus

Therapy with possible release of the nerve

INJURY

LOCAL COMPLICATIONS

VASCULAR

a) Due to laceration of a vessel

b) Hemorrhage, hematoma, compression

c) Evolution into ischemic gangrene

Therapy urgent or not depending on the vessel damaged

TENDINOUS

a) Rupture of a tendon

Reconstruction therapy

VISCERAL

Lungs, bladder, spleen

INJURY

LOCAL COMPLICATIONS

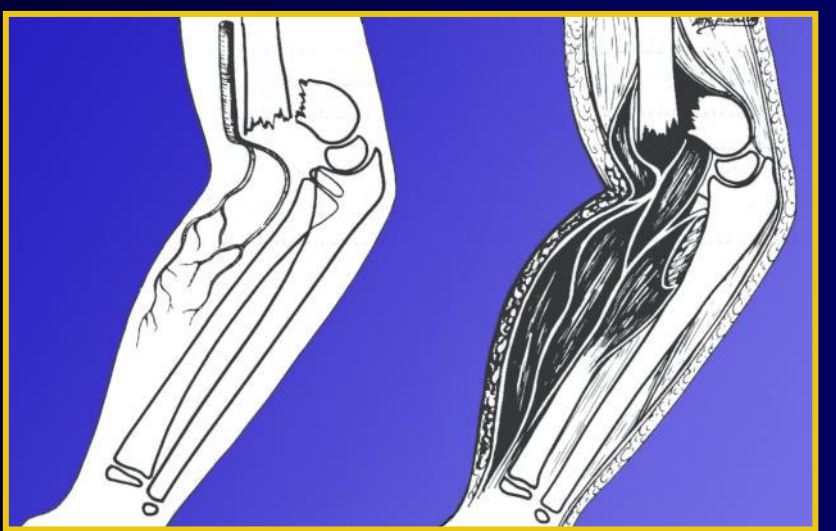
- EARLY

VOLKMANN SYNDROME

a) Almost always in childhood

b) Following elbow and forearm fractures combined with cast or tight bandage (also in the knee)

c) The fracture end causes compression of the humeral artery, ingravescent hematoma in an inextensible area and compression



INJURY

LOCAL COMPLICATIONS

d) Paralysis, retractile scarring (“claw” hand)

Immediate surgical treatment with incision of the skin and aponeurosis of the region without suture

INFECTION

a) Generally open fractures

b) Superficial and deep

INJURY

LOCAL COMPLICATIONS

LATE

DELAYED UNION

a) No fusion at 4-6 months

b) Poor bone callus

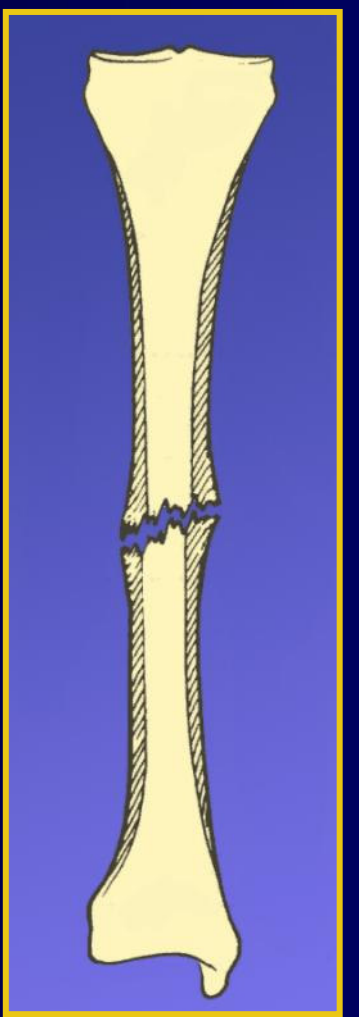
Conservative treatment

NONUNION

a) No fusion at 4-6 months

b) Hypertrophy and atrophy

Surgical treatment



INJURY

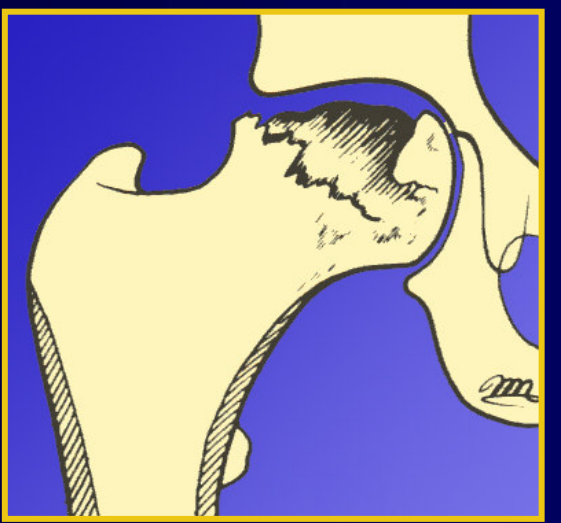
LOCAL COMPLICATIONS

MALUNION

a) Angulations

b) Shortening

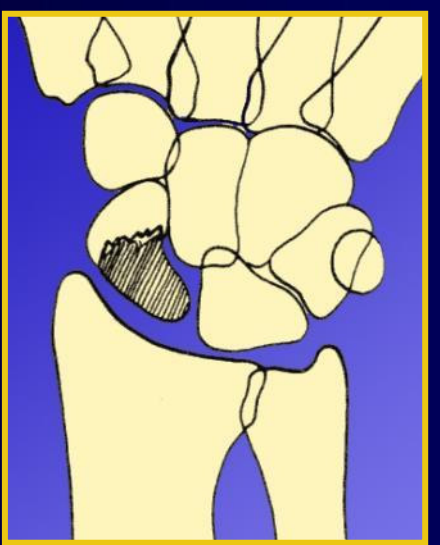
Surgical treatment



ISCHEMIC BONE NECROSIS

a) Femoral epiphysis

b) Carpal scaphoid



INJURY

LOCAL COMPLICATIONS

SECONDARY ARTHROSIS

a) Load axis alterations

b) Joint wear

Surgical treatment

INJURY

CRANIAL-ENCEPHALIC INJURY: lesion by sudden release of kinetic energy in the skull by direct contact and acceleration-deceleration of the head.

PRIMARY LESION: directly due to injury.

LESION: due to the consequences of the injury, for example compression from hematoma.


PRAMAC
41
PRAMAC
14
RIZOMA
PLAYBOY
vlar
RIZOMA
PLAYBOY
vlar


14
elf
HONDA

INJURY

PATIENTS ARE DIVIDED INTO 3 GROUPS:

LOW RISK: without loss of consciousness and neurologically responsive.

MODERATE RISK: brief loss of consciousness and neurologically responsive.

HIGH RISK: with loss of consciousness and neurologically not responsive.


PREMIER
HELMETS

INJURY

DIAGNOSIS:

CLINICAL with GLASGOW SCORE:

3 coma and 15 normal

INSTRUMENTAL with REPEATABLE CT

INJURY

ACUSTIC INJURY: lesion due to noise over 80 decibels. Between 80 and 120 decibels the damage is reversible, over 120 decibels it is irreversible.

Thus hypoacusia can be both acute and chronic, causing progressive neurosensorial lesions.

Earplugs are useful during competitions.


TIM
DUCATI
Enel
GENERALI
riel

INJURY

BRUXISM: dental and parodontal lesions due to grinding. This is due to involuntary, rhythmic, nocturnal contractions of the masseter and temporal muscles, caused by stress and emotional tension.

In competitive motorcyclists this occurs during competitions, thus gumshields are useful.

FALLS in MOTORCYCLE RACING

- Increase in motorcycle power
- Increase in the number of circuits
- Increase in incentives
- Lowering the age of the participants
- Increase in wild-card riders

  (6 in 125, 4 in 250 and 1 in MOTOGP)


bephoto ® 2009
www.bephoto.it

FALLS in MOTORCYCLE RACING

There are more falls in the 125 category

There are more falls during the race due to taking more risks and more tyre wear

Falls in the free trials are due to the rider-vehicle set-up and rider-circuit set-up

Falls due to adverse weather conditions


DUCATI CUNEO
CHIANCHIA
111
sterilgarda
DUCATI CUNEO
TEAM
sterilgarda

FALLS in MOTORCYCLE RACING

HEAD - NECK

CHEST – ABDOMEN

UPPER LIMB

LOWER LIMB

FALLS in MOTORCYCLE RACING

OUT OF 706 FALLS, 106 (15%) CAUSED A SEVERE INJURY

More precisely…

FALLS in MOTORCYCLE RACING

The upper limb and hemisoma are the most common injury sites.

Skeletal injuries (98.11%) are more common than internal organ injuries (1.89%)

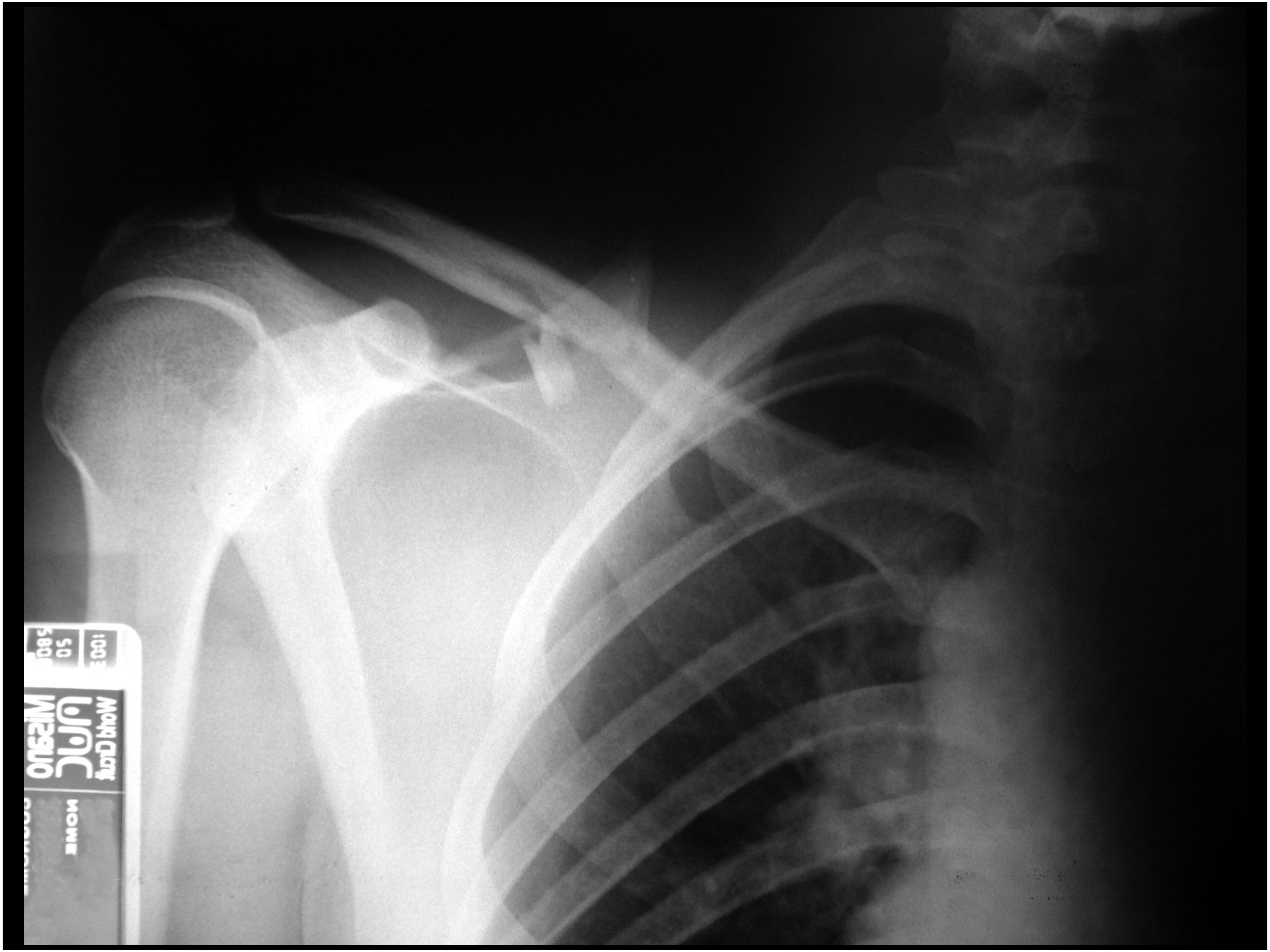
Unlike injuries from road motorcycle accidents, spinal, knee and neurological injuries are rare.

FALLS in MOTORCYCLE RACING

The most common types of lesions in decreasing order: abrasions, fractures, contusions and dislocations.

The most common sites are the hand, wrist, foot and clavicle.


ROX
ADVANCE
SREIL
KK
ADO
AIR-CONDITIONING



MOBILE CLINIC

HISTORY

23 April 1972

In Imola Francesco Costa organises the 200-mile motorcycle race and appoints his son Claudio to organise medical assistance.

From 1972 to 1976

Claudio Costa with Giuseppe Russo and Giancarlo Caroli, position themselves with first aid box in the most dangerous points of the circuit.

MOBILE CLINIC

HISTORY

1977

Mobile Clinic One, the mobile hospital, is set up to ensure adequate first aid on the track by the same medical team, to build up a relationship of continuity and trust between doctor and patient.

About 1800 interventions a year.


agv
DONO DELLA AGV. HELMET AI PILOTI

MOBILE CLINIC

HISTORY

1981

Mobile Clinic II is set up.
Interventions reach 3000 a year.

MOBILE CLINIC

HISTORY

1988

Mobile Clinic III is set up.
Interventions reach 4000 a year.

MOBILE CLINIC

HISTORY

1996

Mobile Clinic IV is set up.

The mobile clinic staff are authorized to operate in all Motorcycle Grand Prix venues worldwide.

It has 5 beds, Radiology and Physical therapy.


3M
IRTA
CLINICA MOBILE
3M Salute
GAB
MICHELIN
CLINICA MOBI
RENAULT

MOBILE CLINIC

HISTORY

2002

Mobile Clinic V is set up.

It consists of 2 extendible parts and 8 beds.


www.clinicamobile.com
CLINICA MOBILE
IMOLA
www.autodromoimola.it
BIMBINGAMBA
PIRELLI
PIRELLI
70
80


VIETATO
USCIRE

MOBILE CLINIC

A trackside Multispecialty Emergency Department open 24 hours a day.

MOBILE CLINIC

Specialities:

ANESTHESIA AND INTENSIVE CARE

ORTHOPEDICS AND TRAUMATOLOGY

SPORTS MEDICINE

NEUROSURGERY

CARDIOLOGY

DERMATOLOGY

EYE CARE

GENERAL MEDICINE


AVANTI, C'È POSTO!!!
LOURDES
SUCCURSALE
CLINICA MOBILE

FIRST AID ON THE TRACK

First aid:

FALL WITHOUT INJURY TO THE RIDER:

THE RIDER IS TAKEN TO THE TRACK MEDICAL CENTER

BY A ROAD ADJACENT TO THE TRACK.


GENERALI
BRIDGESTONE
alpinestars
SL-1
0.KM


GENERALI
Enel
TIM
TRACK

FIRST AID ON THE TRACK

First aid:

FALL WITH INJURY TO THE RIDER:

SHORT FIRST AID: TRANSPORT TO A PROTECTED AREA WITHIN 30 SECONDS BY STRETCHER.

LONG FIRST AID: ADEQUATE PROTECTIVE BARRIER FOR THE RIDER AND MEDICAL STAFF AND TREATMENT THAT EXCEEDS 30 SECONDS.


MEDICAL

FIRST AID ON THE TRACK

First aid:

FALL WITH SEVERE INJURY TO THE RIDER:

RED FLAG: RIDER SEVERELY INJURED RACE SUSPENDED TO ALLOW FREE MOVEMENT TO FIRST AID VEHICLES TO TAKE THE RIDER TO THE MEDICAL CENTER OR HOSPITAL.


MEDICAL
2010
ITALY
DOCTOR

MOBILE CLINIC

Key points:

RESUSCITATION DOCTOR ON THE TRACK

VEHICLE TO TREAT RIDERS

SETTING UP OF THE TRACK MEDICAL CENTER

APPOINTMENT OF A MEDICAL DIRECTOR, I.E. THE DOCTOR IN CHARGE OF FIRST AID ON THE TRACK AFTER A FALL

FIRST AID ON THE TRACK

Prevention:

RIDER WITH SAFE CLOTHES

SAFE CIRCUIT WITH SATELLITE ROADS

TECNICALLY RELIABLE MOTORCYCLE

QUALIFIED AND SUITABLE EMERGENCY CENTER

SAFETY COMMISSION MADE UP ONLY OF GP RIDERS TO ELIMINATE RISKS ON THE CIRCUIT

MOBILE CLINIC

Conclusions:

SETTING UP MOTORCYCLIST MEDICINE AS AN ACTIVITY OF THERAPY AND RESEARCH (CLOTHES, HELMETS, ESCAPE ROADS, ETC…)

ARCHIVE OF “TRACK TRAUMATOLOGIA”

PROMOTION OF SAFE MOTORCYCLE RACING

HANNspree
HONDA
HANNspree
HONDA


HANNspree
Castrol
HONDA
PIRELLI
ARROW
PVM
sbs
HANNspree
HONDA

HANNspree
HONDA
hanns.G
Castrol
POWER1


Xlite
HONDA
axo
axo
Hanns.G


TENBA


HONDA
IZOD


14


16
VIAGRA
LENOX


YAMAHA
agv
YAMAHA
YAMAHA


VERTEX
76


RW
(c)IndustrySpeedway
Industry Speedway


thank
you…