

OR Visit Summary, Identified Problems and Initial Solutions

Team 1 : Orthopaedics

Dec 14, 2018

Los geht's!

Medical Basics
and Flowchart of
Procedures

Patient Preparation,
Used Materials,
Observation

Personnel,
Timeline and
Pain/Gain
Analysis

Projected Plan
and its
feasibility



Team Introduction and Objectives



OR Visit 

TEAM 1

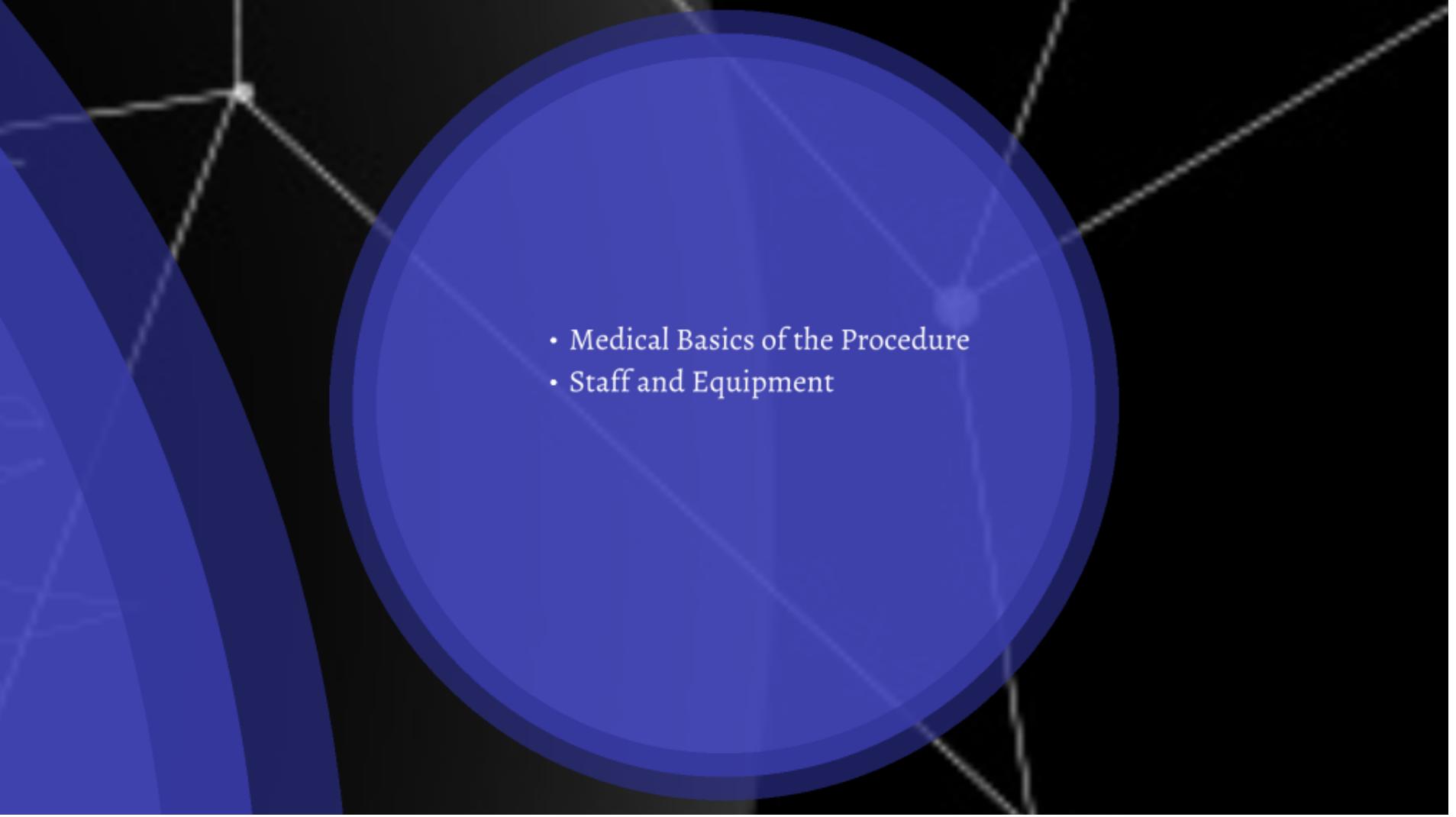
Diana

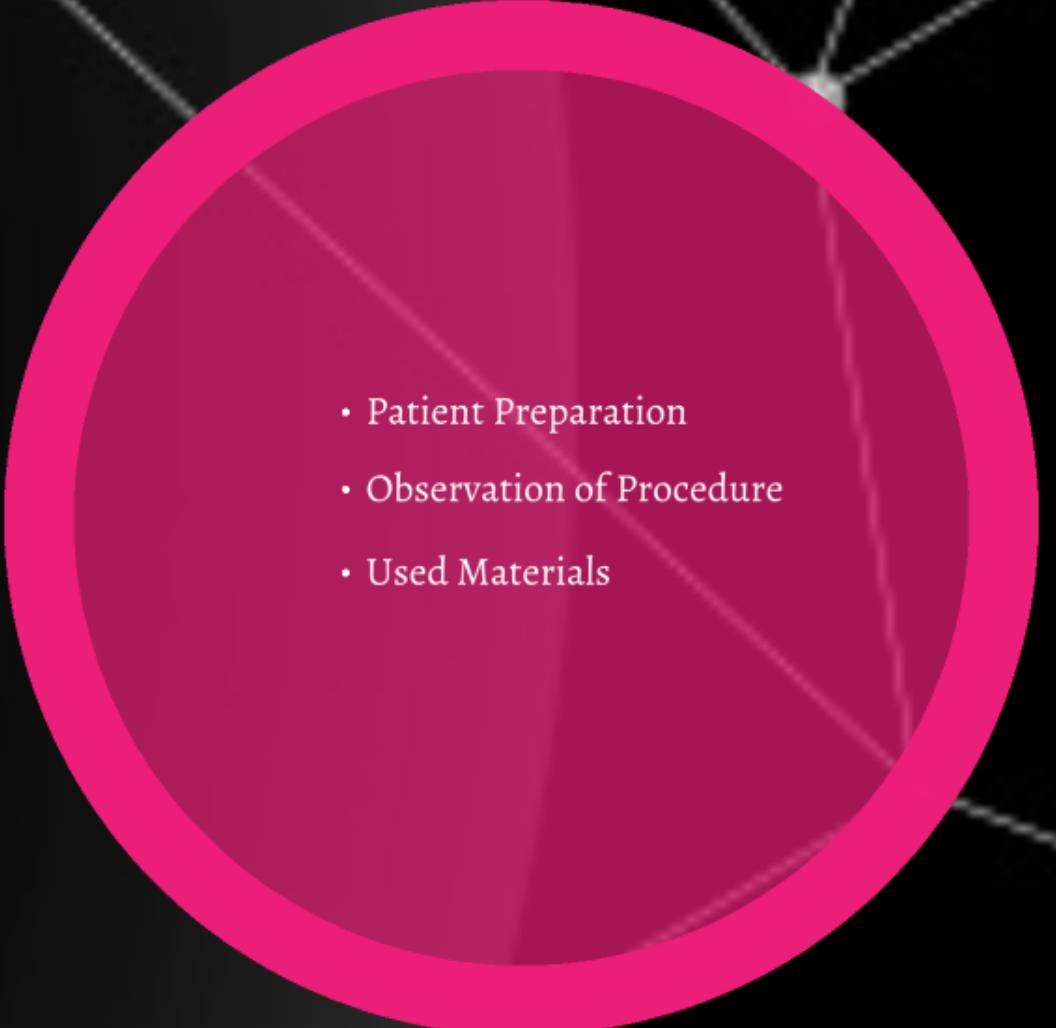
Rakib

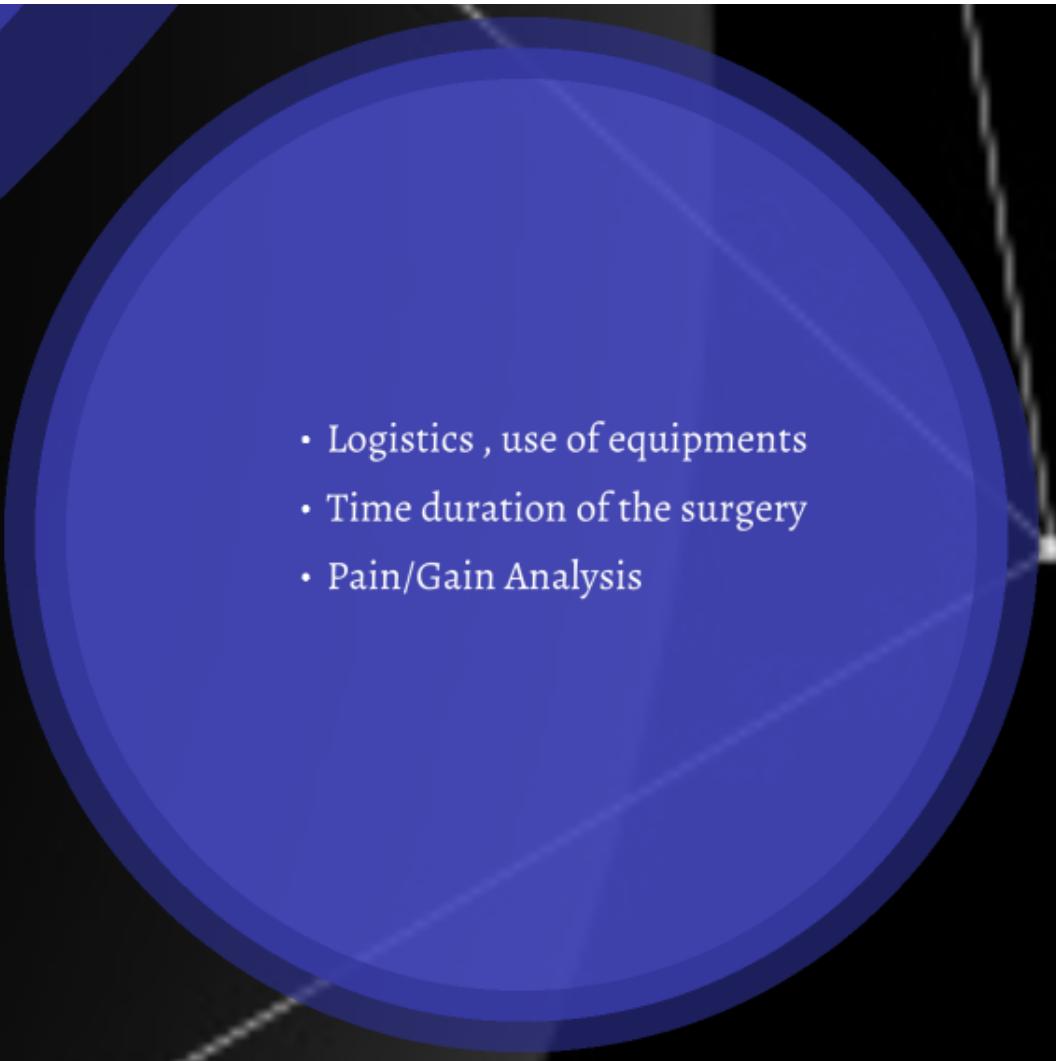
Vindhya

Wasiq



- 
- The slide features a dark blue circular graphic in the center, composed of three concentric rings. Behind it, several thin, light gray lines radiate outwards from the top left corner, creating a network-like effect. To the left of the central circle, there is a large, semi-transparent blue shape that looks like a stylized heart or a series of overlapping circles.
- Medical Basics of the Procedure
 - Staff and Equipment

- 
- Patient Preparation
 - Observation of Procedure
 - Used Materials

- 
- Logistics , use of equipments
 - Time duration of the surgery
 - Pain/Gain Analysis

- 
- Problems
 - Initial Solution
 - Projected Plan

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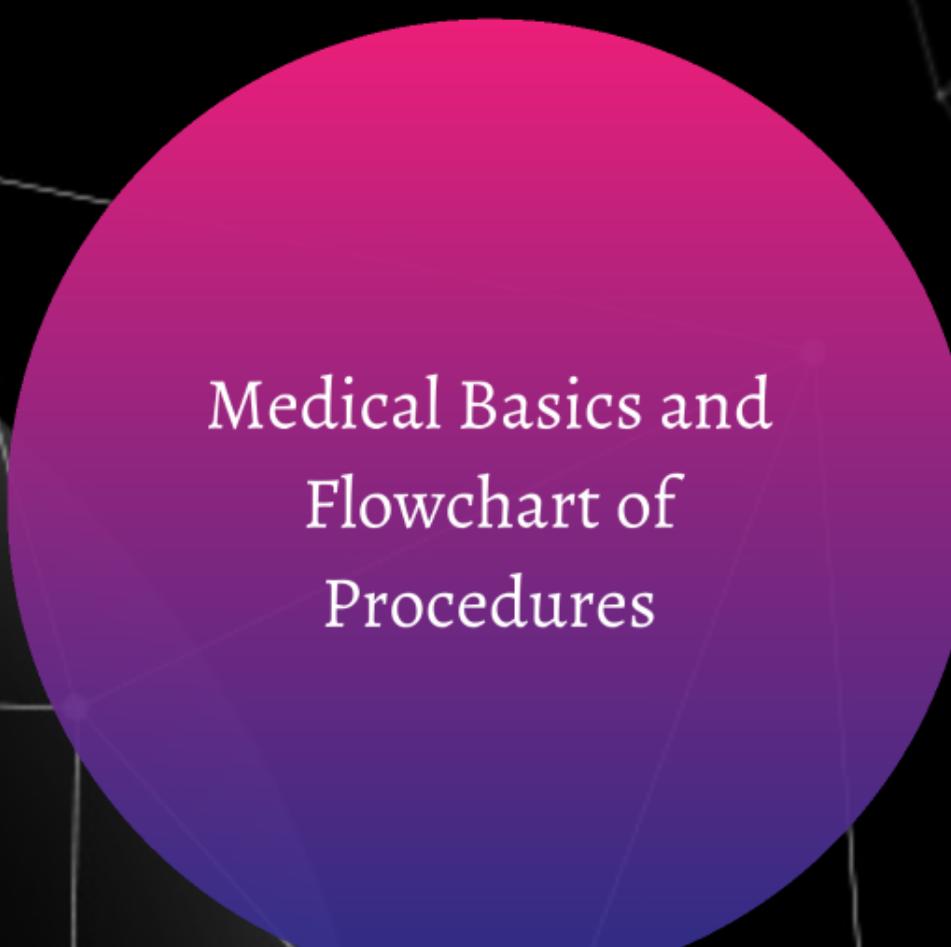
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Medical Basics and Flowchart of Procedures

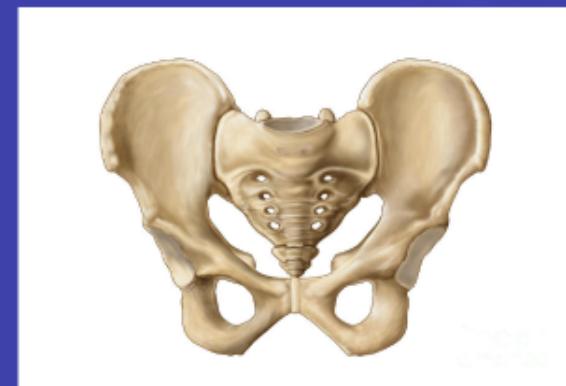
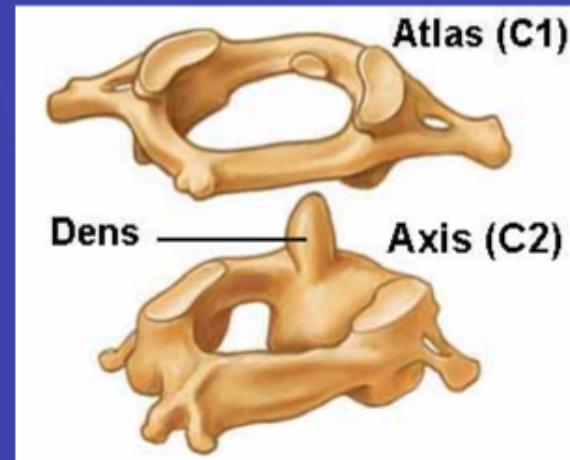


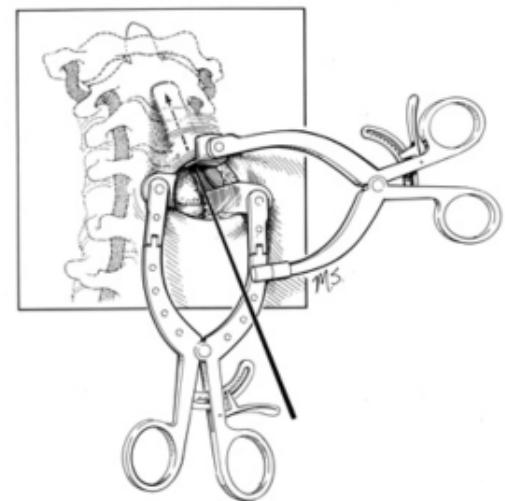
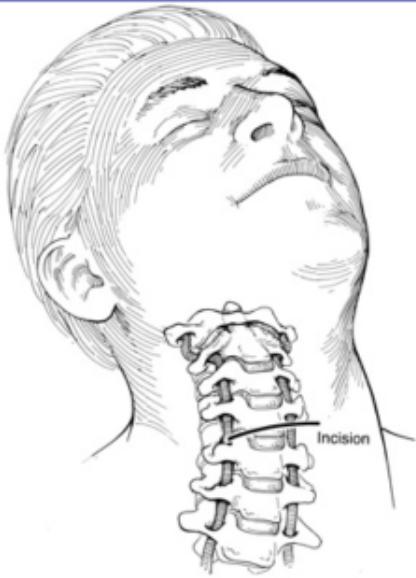
PROCEDURE



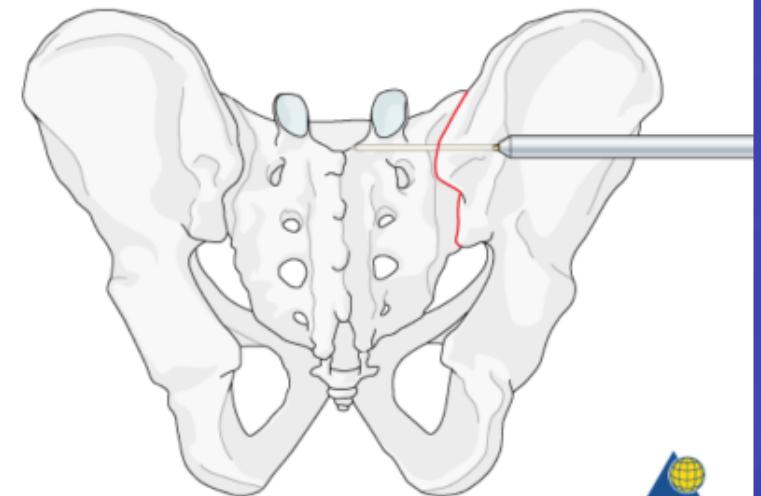
TIMELINE

MEDICAL BASICS





4 cm incision



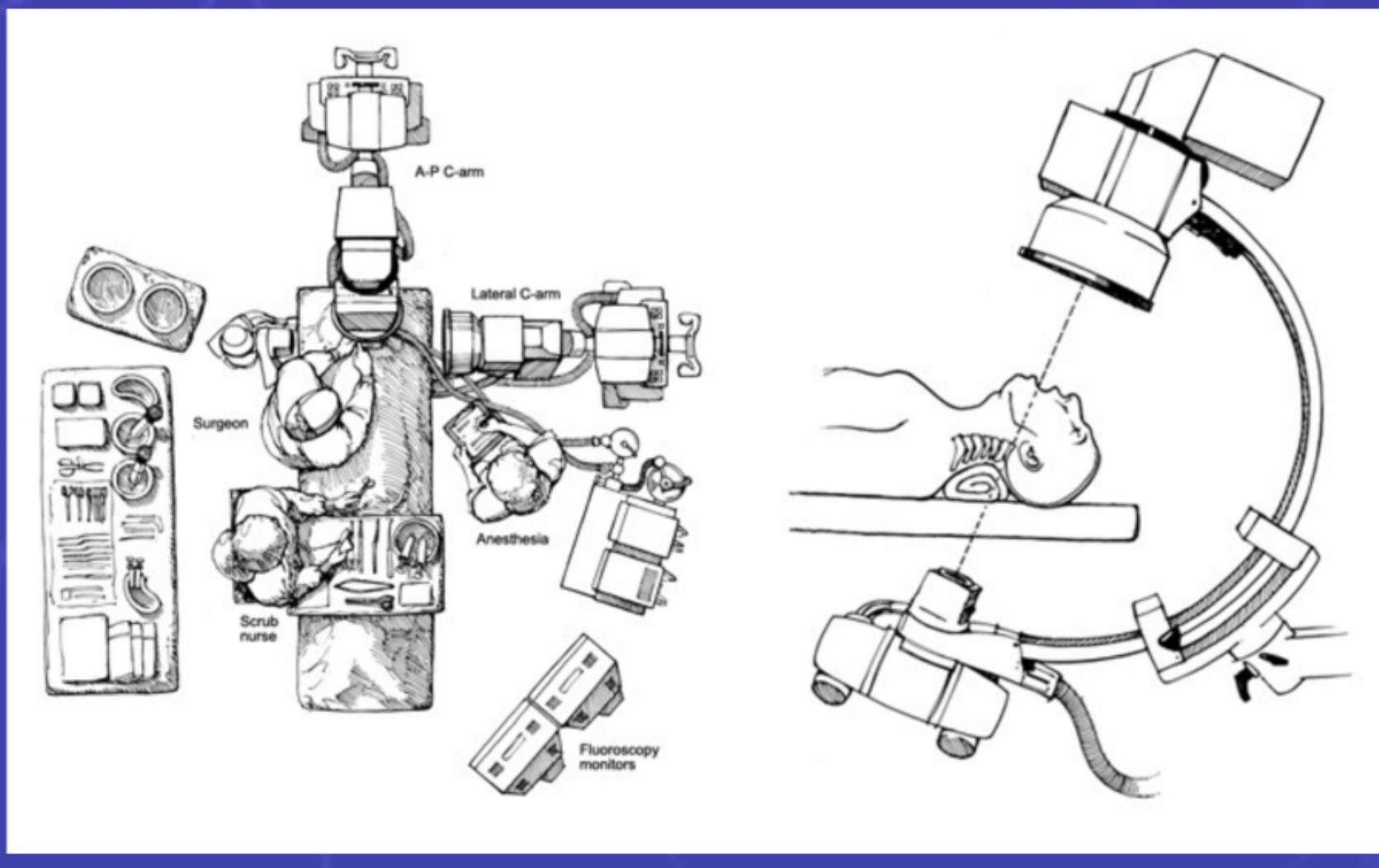
1 cm incision

- K-wire inserted to define the right position
- cannulated screw inserted over the K-wire

PEOPLE AND EQUIPMENT







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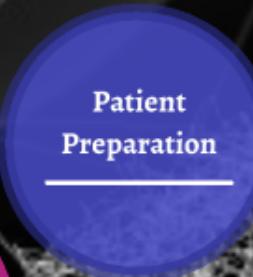
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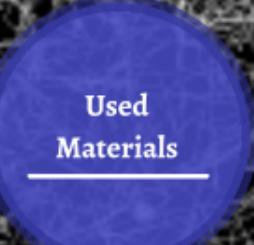
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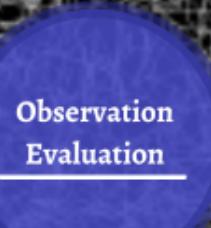
Patient Preparation,
Used Materials,
Observation



Patient
Preparation



Used
Materials



Observation
Evaluation

Patient Preparation





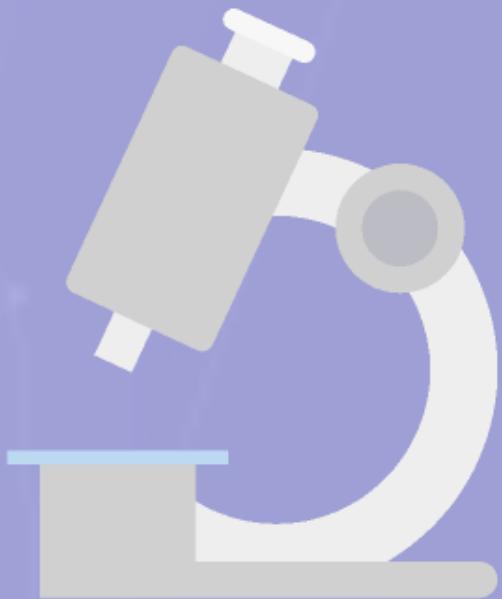








Used Materials



Used Materials

Imaging Tools

C-arm Ziehm Imaging
Ziehm Vision Vario 3D

Used Materials



Imaging Tools

C-arm Ziehm Imaging
Ziehm Vision Vario 3D

Used Materials



Imaging Tools

Surgical Tools

C-arm Ziehm Imaging
Ziehm Vision Vario 3D

Cannula screw
Angled Cannula Screwdriver
Drilling Machine
K-wire
Scalpel
Instrument for opening the bone

Used Materials



Imaging Tools

Surgical Tools

C-arm Ziehm Imaging
Ziehm Vision Vario 3D

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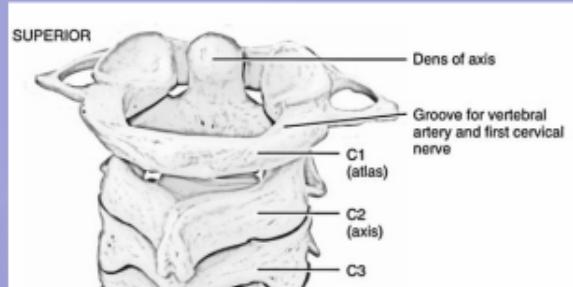


Procedure: Observation

Spinal Surgery



To
Reduce dislocation of Dens



Available Imaging Views

AP

Lateral

#1

K-wire
insertion

#3

Neck fixed
Body restrained



#2

Cannula screw
insertion

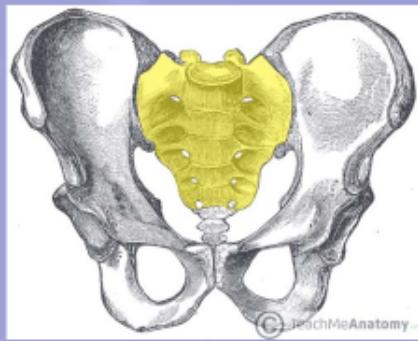
Procedure: Observation

Pelvis Surgery



To

To support sacral vertebrae



Available Imaging Views

AP

Lateral

#1

K-wire
insertion

#3

One leg
restrained

#2

Cannula screw
insertion

Procedure: Evaluation

	Positives	Negatives
Spinal Surgery	Quick surgery Minimal Incision	Exposure to radiation from multiple source
Pelvis Surgery	Quick surgery Minimal Incision	Periodic Exposure to radiation from single source Bed restricted movement of C-arm

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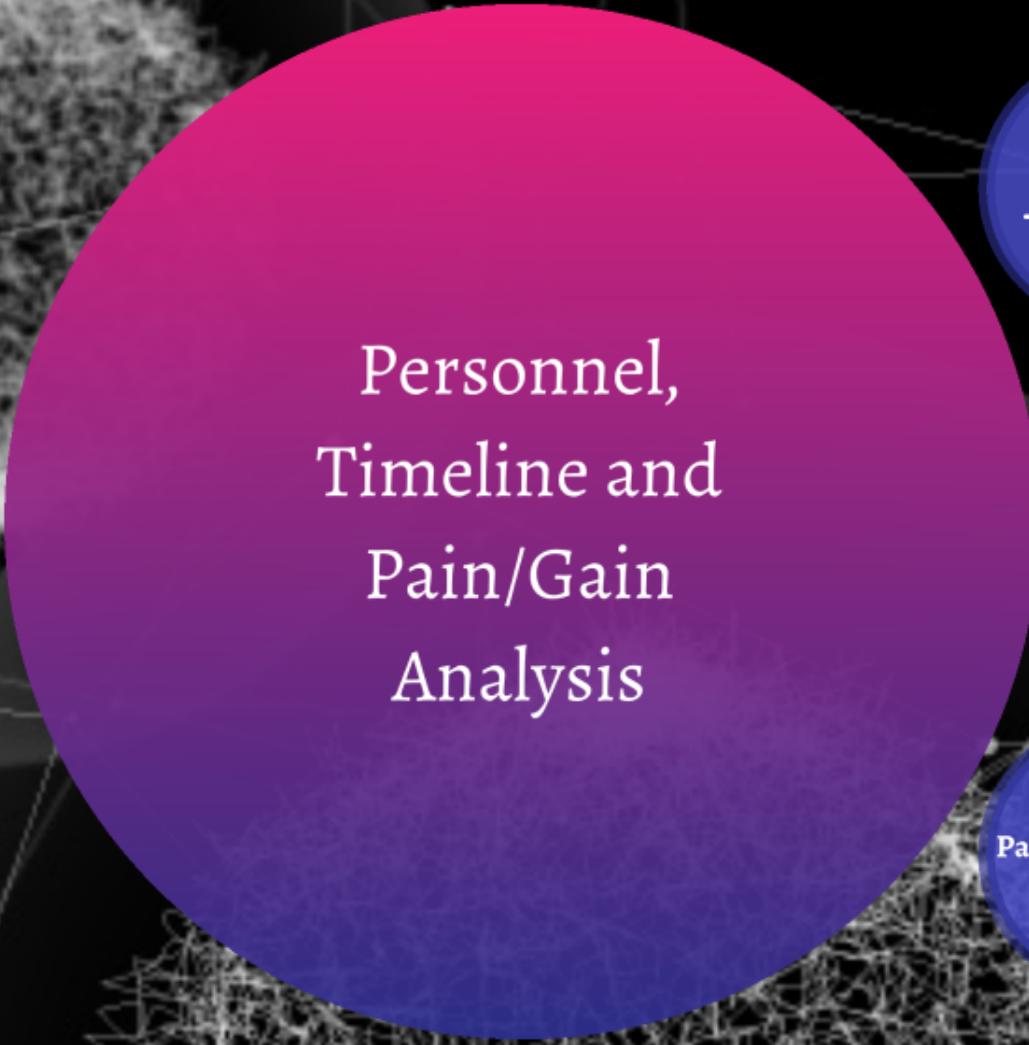
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Personnel, Timeline and Pain/Gain Analysis

Personnel

Timeline

Pain/Gain Analysis

PERSONNEL



Surgeons

1x Operating Surgeon
1x Assisting Surgeon
1x Supervising Surgeon (Oberarzt)

Nurses

1x Nurse handling the tools (Scrub Nurse)
1x Nurse help setting up the C-arm
1x Nurse for Documentation
1x Nurse on Standby

Anaesthesiologist

1x Anaesthesiologist

TIMELINE

~30 mins

Setting up
the C-arm

~15 mins

Inserting the
screw

~5 mins

Preparation
of Patient

~10 mins

Inserting the
K-wire

~5 mins

Stitching up
the incision

PAIN GAIN ANALYSIS- PATIENT

Pains:

Staying at the hospital

Repeated operations

Scars

Post-surgical complications

Pain

Rehab

Immobility

Insurance

Gains:

Less invasive

less scarring

Host-compatible material

No knowledge of procedure undertaken

PAIN GAIN ANALYSIS- SURGEON

Pains:

- Exposure to radiation
- Heavy gear required (anti-radiation suit)
- Long hours of intense accurate work
 - Standing
 - Information access
 - Communication
 - Integrated Coordination

Gains:

- Better communication
- Easy and direct access to information
- Information integration
- Less radiation (i.e. C-arm)

PAIN GAIN ANALYSIS- NURSE

Pains:

Counting cotton pads and all materials used
Too many tools to handle
Preparation of surgery
A lot of paperwork
Barcodes
Unused tools must be resterilized

Gains:

Digitize reports and other paperwork
Easy access to patient information

PAIN GAIN ANALYSIS- ADMINISTRATOR

Pains:

Increase in cost for new systems

Gains:

Increase in revenue due to cost of new procedures
Higher number of patients due to high success rate

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Towards the end...

Problems, Ideas and Projected Plan

PROBLEM

**Projected
Plan**

Matrix Representation

OVERVIEW

Identifying problems in Orthopedic surgery, frequency of problems, Suggested Ideas, their readiness and complexity for a solution; thereby ranking them

GRADING SYSTEM FOR FREQUENCY OF THE PROBLEM

% Frequency	Grade
75 - 100	A
50 - 74	B
25 - 49	C
0 - 24	D

GRADING SYSTEM FOR READINESS OF THE SOLUTION

Grade	Meaning
4	Futuristic (~20 years)
3	Near Future (< 20 years)
2	Present Solutions Available
1	Solutions in practice, not widely though

PROBLEMS AND THEIR FREQUENCY

Problems
Less Integrated Movement (controlling foot paddle and the placement of image screen)
Adjustment of the medical imaging equipments
Extended wait time between multiple surgeries
Images related to surgeries are distributed and saved. Consistency in the stored data
Storage size of images
Documentation
Coordination between many people
K-wire material

SUGGESTED IDEAS : IT'S READYNES

Frequency	Idea	Readyness of solution
A	Voice Controlled Imaging Systems	4
A	Autonomous Positioning System	4
B	Real time Navigation System	3
B	Compressed Images/New Formats	3
C	Simply Scan the tray instead of each equipment	3
D	Better hierarchy and communication	1

Source : Journal of Clinical & Experimental Orthopaedics and Department of Anesthesia and Perioperative Care, University of California, San Francisco, School of Medicine, San Francisco, CA, USA.

Projected Plan

- Integrated Coordination
- Voice-controlled flexible Imaging systems
- Real-time Navigation Systems
- Positioning system with pre-surgery data

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