



PAKISTAN NATIONAL JOINT REGISTRY

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Fifth
Annual Report



Theme

**PNJR 5th year of trailblazing:
Setting the bar for healthcare registries in Pakistan
5th Annual report of Pakistan National Joint Registry**

Dedicated to the work of scientists and scholars of **Pakistan**

Pakistan Arthroplasty Society (PAS)
Pakistan National Joint Registry (PNJR)
www.arthroplasty.org.pk
www.pasnjr.org



Partners of Pakistan Arthroplasty Society (PAS)



Contents

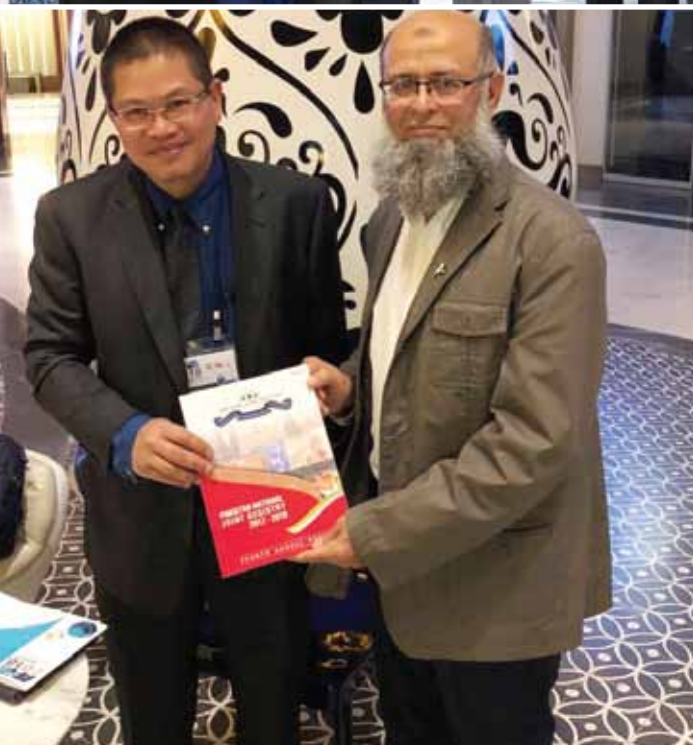
Foreword	05
APOA President Message	07
PNJR Director Message	09
List of Authors	11
PNJR Steering Committee	13

Part 1: PNJR from infancy to a leader in National Health Registries

I. Journey of PAS and PNJR	15
II. Upgrades in the Data Collection Model	19
III. PNJR Clinical Coordinator Network	29
IV. PNJR Partnership with HRAB (Health Research Advisory Board)	33
V. PNJR Stake Holders Network	37
VI. Consolidating Performance and Compliance	45

Part 2: Data Analysis and Reporting

I. Primary Total Knee Arthroplasty	49
II. Revision Total Knee Arthroplasty	63
III. Primary Total Hip Arthroplasty	69
IV. Revision Total Hip Arthroplasty	83
PAS Current National Board	88
International Fellows	89
National Fellows	90



Foreword



At a time when numerous countries in the West are struggling with implementing or upkeeping joint registries, Pakistan once again shows itself to be ahead of the curve. The joint registry report that has been put together is comprehensive, informative and relevant. Thanks to the vision of luminaries such as Prof Noor, Prof Chinoy and the other scholars who are listed on the authors list, you have put Pakistan on the map again by producing this great compendium.

I like the mention of non-orthopedic Pakistani Noble laureates, scientists, and visionaries in the report who serve humanity in various capacities in different parts of the world.

It is wonderful, but not surprising, to see the association between Pakistan Orthopedic Association and numerous other international organizations. The leadership of Pakistan Orthopedic Association has been present and contributed to the educational mission of many relevant international meetings. They have forged friendship with other educators and organizations that will serve our patients for the years to come. I am personally a beneficiary of these friendships. I have enjoyed learning from my friends in Pakistan about orthopedics, life and more importantly about humanity.

I strive to visit your beautiful country, the basin of human civilization and my generous friends. I take pride in wearing the POA tie that I was given a few years ago and declaring my association with POA to my patients.

I am honored to call many of you friends and hope to have the chance to forge friendship with other scholars whom I am yet to meet.

May Allah bless you, your families, your nation and your beautiful country.

Sincerely yours

Javad Parvizi MD, FRCS
James Edwards Professor of Orthopedic Surgery,
Sidney Kimmel Medical College
Rothman Institute at Thomas Jefferson University Hospital
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125 South 9th Street
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Message

President APOA



First of all, I would like to thank the President Prof. Dr. Shahid Noor for his kind invitation to write this message for the 5th Annual Report of the Pakistan National Joint Registry (PNJR). It's an honor and pleasure for me to write the message for the 5th annual report of PNJR.

Since its initiation in Sweden in 1975, national joint arthroplasty registries have been used increasingly by many other countries, worldwide. They are extremely useful, and valuable scientifically in monitoring the clinical results, and outcomes of joint arthroplasties in national aspects, comparatively.

Moreover, the International Society of Arthroplasty Registries (ISAR) acts as the international coverage of national joint arthroplasty registries.

I congratulate the President Prof. Dr. Shahid Noor for his relevant contributions, and efforts. I strongly believe that the contribution of the Pakistan Arthroplasty Society with the project PNJR in its 6th successful year is important, and valuable in both Asia Pacific region, and the whole world.

I recommend this report for all our colleagues who are interested in the field of arthroplasty.

Finally, I would like to invite you to the 21st APOA Biennial Congress in Malaysia in 2020.

Sincerely yours

Prof. Mahmut Nedim DORAL, M.D.
President, APOA
Chair Of Department of Orthopedics & Trauma
Hacettepe University



Message

Director PNJR



It is a matter of immense pleasure and pride for me to present to you this 5th Annual Report of Pakistan National Joint Registry (PNJR). It is the continuous zeal, effort and commitment of the executive board of Pakistan Arthroplasty Society (PAS), the authors of this report and more importantly the contributors who have registered their cases into the database that has made us proud by lifting the standard of our registry for the 5th consecutive year, to produce a world class report.

We have strived hard to control the problems encountered every year in production of this report and one of the major work has been on cleaning of data for which I would like to praise the work put in by our official research partners-Metrics Research. We have chosen a unique theme of introducing Pakistani scientists. This shows the immense talent that our beautiful country cultivates and that presents the hard work of many scientists in austere circumstances. Our registry is akin to such work of scientific relevance that puts us right on top with other countries of the developed world who have national joint registries. Though far from being perfect, we are well on track in the quest to join the elite of the world of arthroplasty.

You can also see that with each passing year we are gaining popularity and this is reflected in the continuous growth of centers, PI's and the number of joints registered. I am hopeful that this effort of the Pakistan Arthroplasty Society will go a long way in shaping the future of joint replacement surgery in Pakistan and affect many scientific databases in collaborative research across the region and the globe.

The board of PNJR has been successful in guiding and developing many surgical and medical national registries in Pakistan including cardiology registry of Pakistan, diabetic registry of Pakistan, stroke registry of Pakistan and hepatitis registries of Pakistan. We are encouraging our colleagues and subspecialty orthopedic societies to develop national registries.

Sincerely yours

Prof. Syed Shahid Noor MD, FRCS(Tr&Orth)

Director, Pakistan National Joint Registry.

President, Pakistan Arthroplasty Society.

President, Pakistan Orthopaedic Association (2017-2018)

Founder Principal and project director, Liaquat National Medical College.

Chairman Registry Committee, Health Research Advisory Board.

Head, Department of Orthopaedic, Liaquat National Hospital and Medical College.

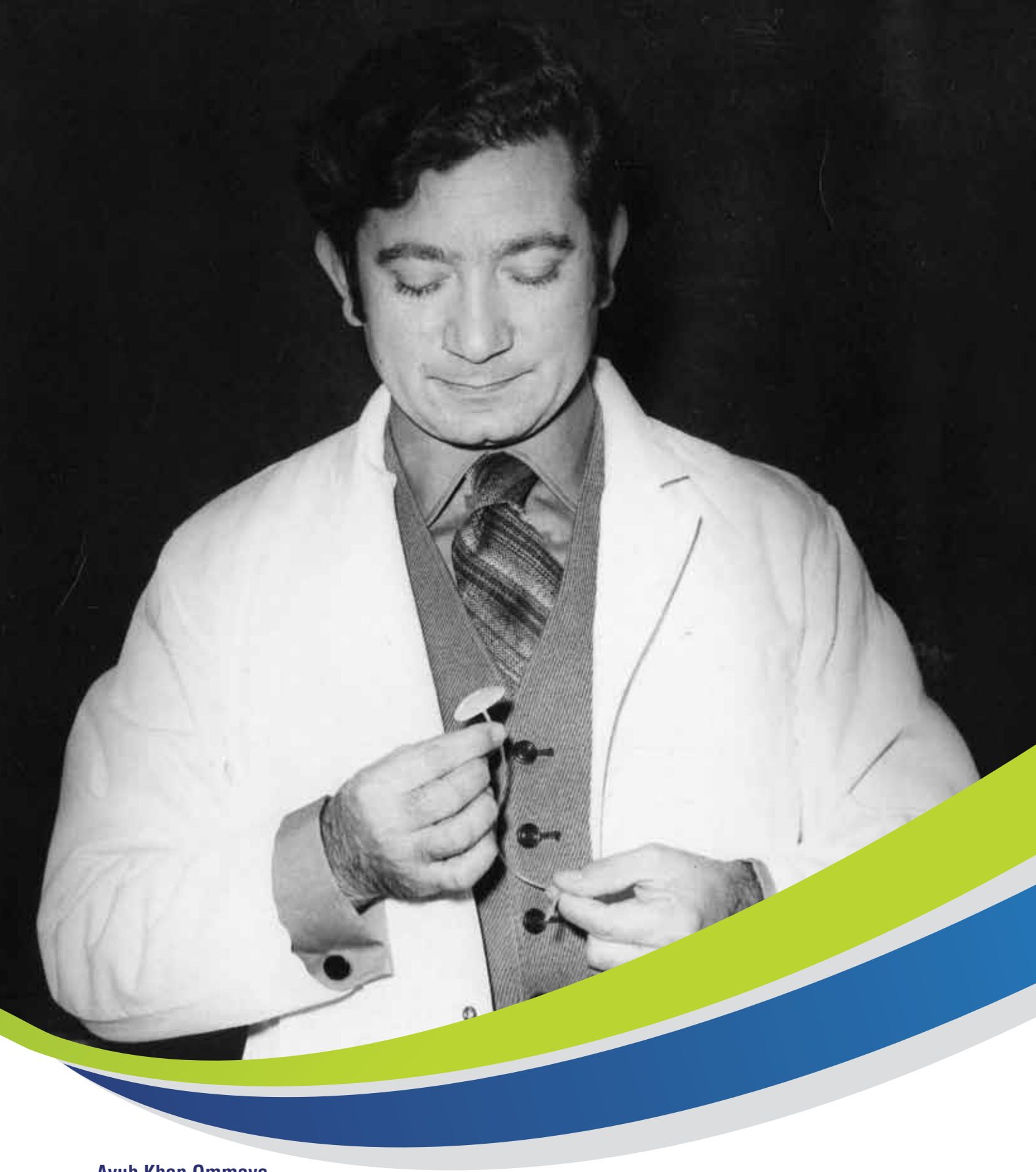


Dr. Naveed Syed

He is a Pakistani Canadian scientist. He is the first scientist who managed to 'connect brain cells to a silicon chip'. Dr. Naveed estimates science-fiction type 'Machine-Men' may be developed within 10 to 20 years, using his silicon chip. Currently he is a Professor and Head Department of Cell Biology & Anatomy at the University of Calgary, Canada. He was featured in Time Magazine (Canada) as well.

List of Authors

- ① Prof. Syed Shahid Noor**
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President, Pakistan Arthroplasty Society (PAS)
Director, Pakistan national joint registry
Head of Dept, Orthopedics,
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National Coordinator, PNJR
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MBBS, FCPS (Trauma & orthopaedics)
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Liaquat National Hospital and Medical College Karachi
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MBBS, FCPS (Trauma & orthopaedics)
Senior Registrar
Liaquat National Hospital and Medical College Karachi



Ayub Khan Ommaya

Dr. Ommaya published over 150 articles, chapters, and books. His research focused on cancer treatment, traumatic brain injury, a CSF artificial organ, and philosophy of mind. He developed Ommaya reservoir in 1963. The reservoir was the first medical port to use silicone which is biologically inert and self-sealing.

Steering Committee



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Research Partner

1. Health Reserch Advisory Board (HRAB)
2. Metrics Research



INTRODUCING PART 1

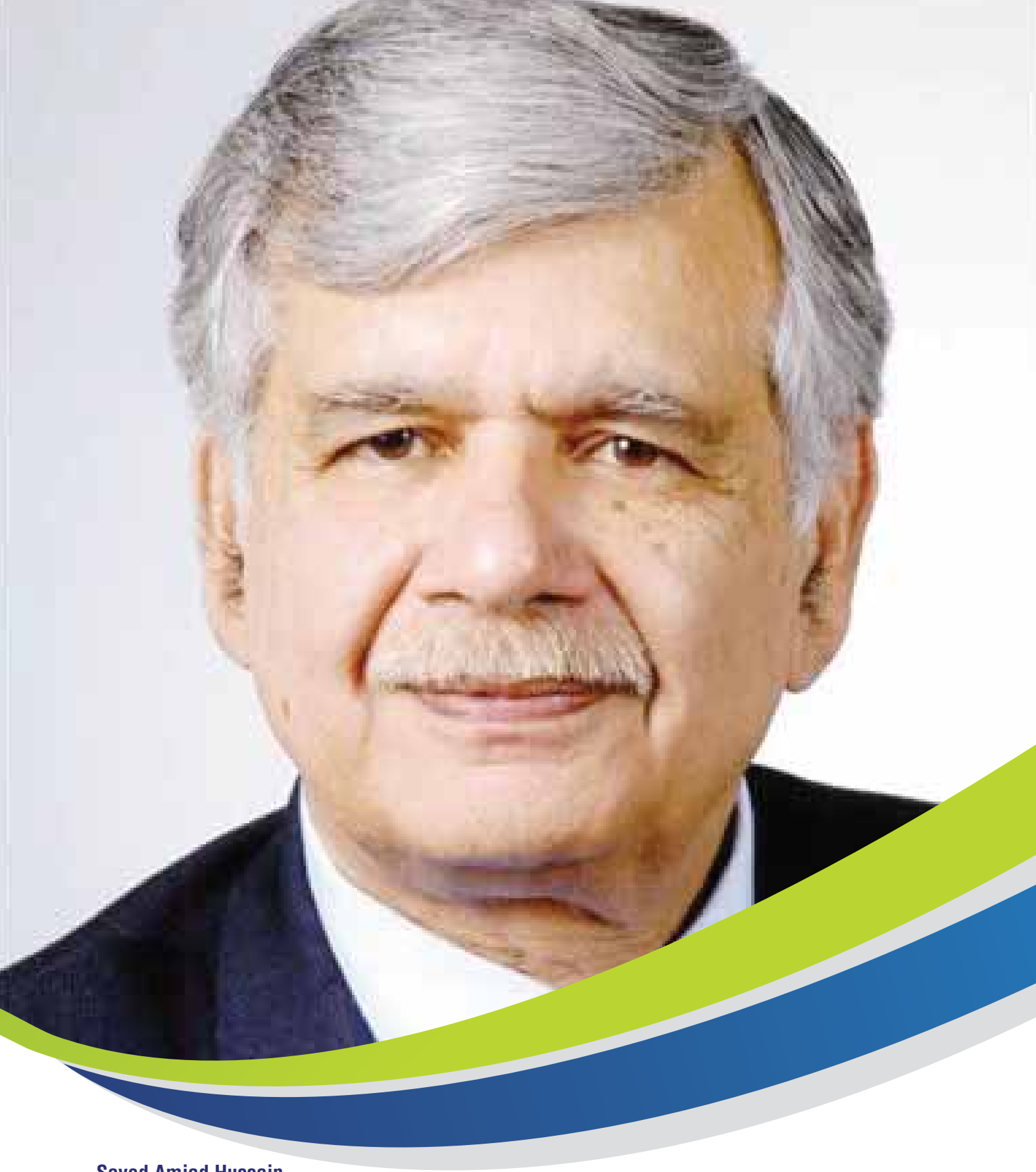
PNJR 5th Annual Report





Journey of PAS and PNJR

SECTION I



Sayed Amjad Hussain

Sayed Amjad Hussain is another Pakistani inventor who invented two surgical devices – the pleuroperitoneal shunt and a special endotracheal tube. Dr. Hussain is a member of 17 professional organizations, 10 administrative positions, is a visiting professor to 12 universities throughout the world and is a member of the editorial board of 6 medical journals.

SECTION I

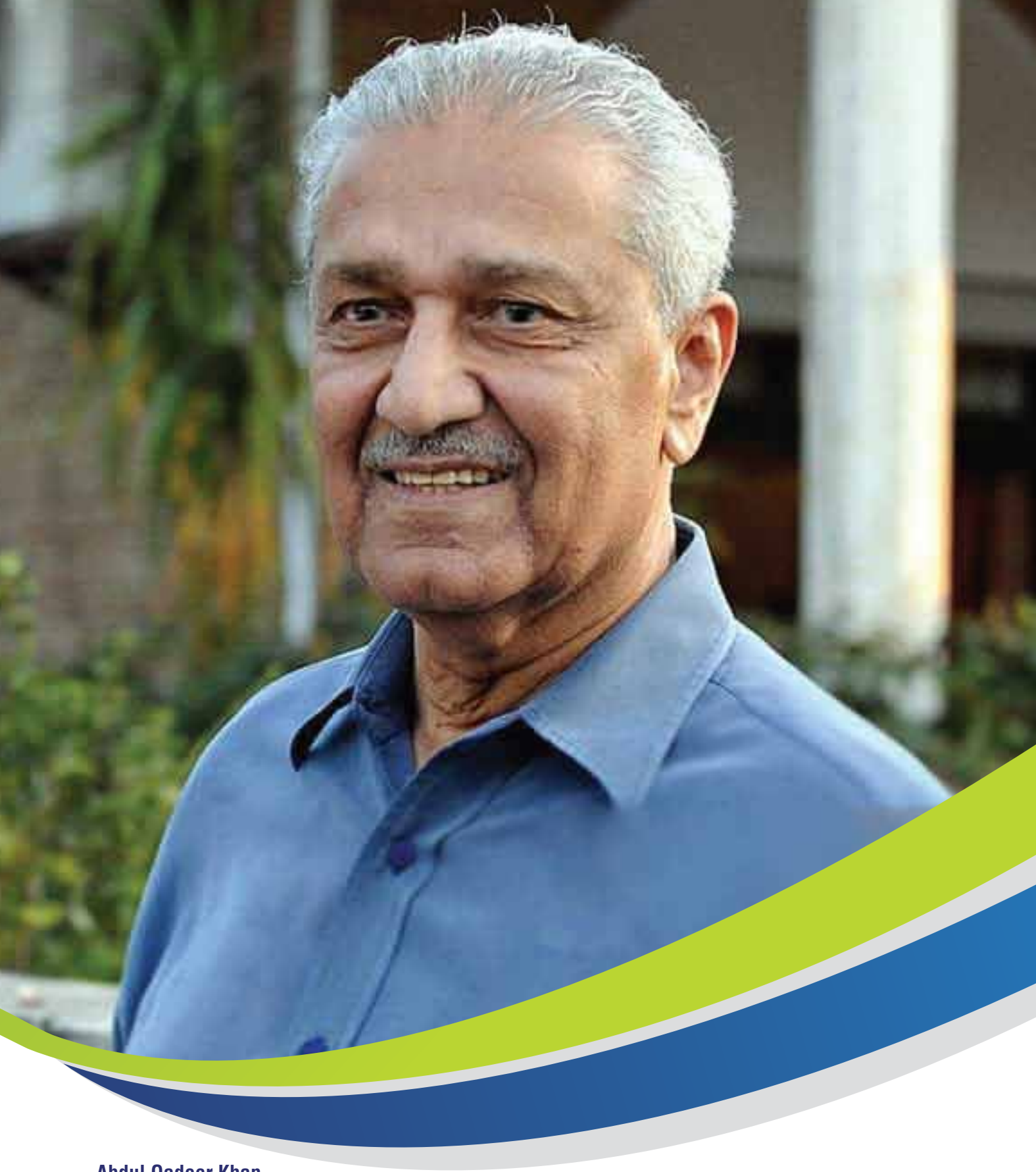
Broadening Partnerships with Health Registeries

PNJR has been setting the bar in many areas of registry development in the field of healthcare in Pakistan. Our partnership with health registry advisory board (HRAB) has led us to become leaders in the field in the country, Through this platform, we have partnered with multiple healthcare registries in the last 5 years.

We have introduce the concept of disease specific registries, emphasized the use of ICH-GCP guidelines in establishing and conducting health registries across the board as well as the culture of regularly updating and modifying data entry according to end user feedback mechanisms.

The next logical step for us now is to start formulating a governing body for all health care associated registries to ensure compliance to the highest standards by all steering committees and their registered investigator. This is as anticipated a daunting task since all registries currently operating under HRAB umbrella are voluntary and improving compliance is difficult. Yet our partnerships with other fields of medicine have enabled us to set an example and most other registry steering committees are in direct contact with us to broaden the partnership, Share technical knowledge in order to improve their data collection. We learn from our mistakes and successes and want to collaborate in every aspect. We are positive that these partnerships can lead to unified drive to setting up a voluntary governing body for healthcare registries in Pakistan.

At some point in time when our successful model is robust enough to be self-sustainable, we envision that these registries become associated with local health authorities and become compulsory rather than voluntary. For this we will have to demonstrate a successful running model to the government which we shall achieve in the near future and hopefully in the upcoming issues if the PNJR annual report, we shall tell our readers how the PNJR has literally been the matchstick to light up the fire of national healthcare database collection.



Abdul Qadeer Khan

He made major contributions in molecular morphology, physical martensite, and its integrated applications in condensed and material physics.



Upgrades in Data Collection
Model to address Data Completeness

SECTION II





Professor Sohail Khan

Professor Sohail Khan, a Pakistani researcher at Loughborough University designed a clever lavatory that transforms human waste into biological charcoal and minerals. These can then be used as fuel or a form of conditioner for soil. It also produces clean water. His invention was appreciated by Bill Gates.

SECTION II

Upgrades in Data Collection Model to address Data Completeness

The registry has constantly been subject to improvement with the passage of time. The most recent addition to the online CRF is introduction of option for entry of bilateral simultaneous joint arthroplasty. The users do not have to enter everything and the system retrieves the patients information for the second side automatically. The surgeon can then modify data entries to select the type of implant used and any other variables that needs to be changed.

Data entries are constantly monitored for completeness and cleanliness of data and a three monthly review is carried out. Users are informed about missing entries or erroneous data entries and the data is periodically modified. Data entry is being facilitated by the hiring of even more data collection officers. We have fully functional data collection teams who regularly collect paper based CRF's from hospitals across the country. Our main centers are

1. Karachi
2. Lahore
3. Islamabad/Rawalpindi
4. Peshawar

PI training for entering data is an ongoing process. Most of our original users are now very comfortable with the data entry interface. New users are constantly being trained to use the interface properly.

Appendices:

1. Total Knee Arthroplasty CRF
2. Total Knee Arthroplasty Follow up Form
3. Total Hip Arthroplasty CRF
4. Total Hip Arthroplasty Follow up Form



PNJR No.....

1. PATIENT DETAILS

Surname Given Names
☐ Female ☐ Male DOB Age
 Weight.....(Kg) Height.....(Feet) BMI.....
 Address Post Code
 CNIC # Tel: Mobile No:

2. HOSPITAL & CONSULTANT DETAIL

Hospital Province.....
 Consultant Surgeon.....Asst. Surgeon.....
 Date of Admission Date of Operation.....
 Date of Discharge Hosp Registration No.....

3. PRE OPERATIVE DEFORMITY

☐ Varus (degree)..... ☐ Recurvatum (degree).....
☐ Valgus (degree)..... ☐ Extra articular deformity ☐ No ☐ Yes
☐ FFD (degree)..... (Specify)

4. PRE OPERATIVE RANGE OF MOTION

☐ Extension (degree)..... ☐ Flexion (degree)

5. COMORBIDITIES

☐ DM ☐ Asthma ☐ HTN ☐ IHD ☐ CKD
☐ Previous knee surgery ☐ Hepatitis Others

6. AMBULATORY STATUS

☐ Community Ambulator ☐ With support ☐ Without support
☐ Home Ambulator ☐ With support ☐ Without support
☐ Non Ambulator

7. ANAESTHESIA DETAILS

ASA GRADE

☐ 1 ☐ 2 ☐ 3 ☐ 4

TYPE OF ANAESTHESIA

☐ General
☐ Spinal
☐ Epidural
☐ General + Epidural
☐ Spinal + Epidural

8. KNEE SOCIETY SCORE

Knee Score (0 - 100)
 Functional Score (0 - 100)

9. DIAGNOSIS AND PROCEDURE DETAIL

Primary TKA

☐ R ☐ L

Diagnosis

☐ Osteoarthritis
☐ Secondary Osteoarthritis
☐ Rheumatoid Arthritis
☐ Other Inflammatory Arthritis
☐ Osteonecrosis/Avascular Necrosis
☐ Tumour (Specify)
☐ Other (Specify)

Revision TKA

☐ R ☐ L

Diagnosis

☐ Aseptic Loosening ☐ Tibia ☐ Femur
☐ Osteolysis ☐ Tibia ☐ Femur
☐ Infection
☐ Instability ☐ Anteroposterior ☐ Varus / Valgus ☐ Multi Planar
☐ Periprosthetic Fracture
☐ Femur ☐ Tibia ☐ Patella
☐ Implant Breakage
☐ Femur ☐ Tibia ☐ Patella
☐ Previous Implant Used (Specify)

10. SURGICAL DETAILS

INCISION

☐ Midline (Standard)
☐ Medial Parapatellar
☐ MIS (midline/medial)

TOURNIQUET

☐ No ☐ Yes

DRAIN

☐ No ☐ Yes

BONE GRAFT

☐ No ☐ Yes

CEMENTING TECHNIQUE

☐ Vacuum mixing ☐ No ☐ Yes
☐ Pulse lavage ☐ No ☐ Yes
☐ Application of cement on implant (pre insert) ☐ No ☐ Yes

APPROACHES

☐ Medial Parapatellar
☐ Sub Vastus
☐ Mid vastus
☐ Lateral Parapatellar
☐ Quadriceps Snip
☐ ETTO
 Other

11. ADVERSE INTRA OPERATIVE EVENT

☐ No ☐ Yes
☐ Fracture ☐ Nerve Injury ☐ Patella Tendon Avulsion
☐ Vascular Injury ☐ Ligament Injury Others

PNJR-Protocol V 1.0-Knee form-version# 2.0-Date: January 25th, 2014



PNJR No.....

12. THROMBOPROPHYLAXIS

CHEMICAL

☐ NO ☐ Yes

MECHANICAL

☐ NO ☐ Yes

☐ LMWH ☐ Pentasaccharide ☐ Warfarin
☐ Direct Thrombin Inhibitor ☐ Aspirin ☐ Foot Pump ☐ T.E.D Stocking
☐ Intermittent Calf Compression
 Other

13. ANTIBIOTIC

Generic	Route	Duration (Days)
1	IV / Oral
2	IV / Oral

14. POST-OP PAIN MANAGEMENT

☐ PCA (days)..... ☐ Epidural (days)..... ☐ Nerve Block (days).....
☐ Intra-Op Local..... ☐ IV.....(days).....
☐ IM.....(days)..... ☐ Oral.....(days).....

15. CLINICAL & RADIOLOGICAL IMAGE

☐ Clinical Image ☐ Radiological Image

16. IMPLANT DETAILS

IMPLANT DESIGN

☐ CR ☐ PS ☐ Fixed Bearing ☐ Mobile Bearing
☐ High Flex ☐ CCK ☐ RHK ☐ LPS
☐ Metaphyseal Sleeve ☐ Trabecular Metal Cone

A - FEMORAL COMPONENT

☐ NONE ☐ FEMORAL ☐ STEM

Company Company
 Prosthesis Name..... Prosthesis Name.....
 Cat/Ref #..... Cat/Ref #.....
 Size Size

FEMORAL AUGMENTS (Complete details by marking boxes) ☐ No ☐ Yes

☐ Distal femoral ☐ Medial ☐ Lateral
☐ Posterior condyle ☐ Medial ☐ Lateral

FEMORAL CEMENT: ☐ No ☐ Yes

CEMENT NAME:

B - TIBIAL COMPONENTS

(Mark relevant box, place company labels or complete details by hand)

☐ NONE ☐ All POLY ☐ BASE PLATE ☐ INSERT ☐ STEM

Company Company
 Prosthesis Name..... Prosthesis Name.....
 Cat/Ref #..... Cat/Ref #.....
 Size Size

TIBIAL CEMENT: ☐ No ☐ Yes

CEMENT NAME:

TIBIAL AUGMENTS

☐ Step Wedge ☐ Medial ☐ Lateral ☐ Full
☐ Hemi Wedges ☐ Medial ☐ Lateral ☐ Full
☐ Screws ☐ No ☐ Yes Number.....

C - PATELLA COMPONENT

☐ No ☐ Yes

Company
 Prosthesis Name.....
 Cat/Ref # Size

PATELLA CEMENT: ☐ No ☐ Yes

CEMENT NAME:

17. COMPUTER ASSISTED

☐ No ☐ Yes

System Used

18. POST-OP REHABILITATION PROTOCOL

☐ Full weight bearing ☐ Non weight bearing

Knee Range of motion started at day

☐ CPM used ☐ No ☐ Yes Days from _____ to _____

Completed by: Date

Signature:

PNJR-Protocol V 1.0-Knee form-version# 2.0-Date: January 25th, 2014



Date:...../...../.....

KNEE FOLLOW-UP FORM

PATIENT DETAILS

PNJR No.....

Surname..... Given Name..... CNIC #.....

Tel / Cell #..... Hospital..... Surgeon.....

Date of Surgery..... TKR (L/R)..... Hospital Reg. #.....

FOLLOW-UP VISIT

- | | | | |
|-----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> 2 Weeks | <input type="checkbox"/> 6 Weeks | <input type="checkbox"/> 3 Months | <input type="checkbox"/> 6 Months |
| <input type="checkbox"/> 1 Year | <input type="checkbox"/> 5 Years | <input type="checkbox"/> 10 Years | <input type="checkbox"/> 15 Years |
| <input type="checkbox"/> 20 Years | Others..... | | |

FUNCTIONAL SCORE (0-100).....

KNEE SOCIETY SCORE (0-100).....

COMPLICATIONS

- | | | |
|---|------------------------------------|---------------------------------|
| <input type="checkbox"/> Hematoma | <input type="checkbox"/> DVT | <input type="checkbox"/> PE |
| <input type="checkbox"/> Nerve Palsy | <input type="checkbox"/> Fracture | <input type="checkbox"/> Others |
| <input type="checkbox"/> Wound Dehiscence | <input type="checkbox"/> Infection | |

Surgeon Comments.....

.....

.....

Completed by:.....

Signature:



PNJR No.....

1. PATIENT DETAILS

Surname Given Names
☐ Female ☐ Male DOB Age
 Weight..... (Kg) Height..... (Feet) BMI.....
 Address Post Code
 CNIC # Tel: Mobile No:

2. HOSPITAL & CONSULTANT DETAIL

Hospital Province.....
 Consultant Surgeon...../Asst. Surgeon.....
 Date of Admission Date of Operation.....
 Date of Discharge Hosp Registration No.....

3. PRE OPERATIVE DEFORMITY

☐ Fixed flexion deformity (degree)
☐ Abduction deformity (degree)
☐ Adduction deformity (degree)
 Ankylosis ☐ No ☐ Yes

4. PRE OPERATIVE RANGE OF MOTION

☐ Flexion (degree) ☐ Extension (degree)
☐ Abduction (degree) ☐ Adduction (degree)
☐ Internal Rotation (degree) ☐ External Rotation (degree)

5. COMORBIDITIES

☐ DM ☐ Asthma ☐ HTN ☐ IHD ☐ CKD
☐ Previous hip surgery ☐ Hepatitis Others

6. AMBULATORY STATUS

☐ Community Ambulator ☐ With support ☐ Without support
☐ Home Ambulator ☐ With support ☐ Without support
☐ Non Ambulator

7. HARRIS HIP SCORE

(0 - 100)

8. CLINICAL & RADIOLOGICAL IMAGE

☐ Clinical Image ☐ Radiological Image

9. DIAGNOSIS AND PROCEDURE DETAIL

Primary THA

☐ R ☐ L
Diagnosis
☐ Osteoarthritis
☐ Secondary Osteoarthritis
☐ Rheumatoid Arthritis
☐ Other Inflammatory Arthritis
☐ Osteonecrosis/Avascular Necrosis
☐ Tumour (Specify)
 Other (Specify)

Revision THA

☐ R ☐ L
Diagnosis
☐ Osteolysis ☐ Infection
☐ Instability ☐ Dislocation
☐ Aseptic Loosening
☐ Acetabulum ☐ Femur
☐ Periprosthetic Fracture
☐ Implant Breakage
☐ Acetabulum ☐ Femur
☐ Previous Implant Used (Specify)

10. ANAESTHESIA DETAILS

ASA GRADE

☐ 1 ☐ 2 ☐ 3 ☐ 4

11. SURGICAL DETAILS

POSITION

☐ Supine
☐ Lateral

INCISION

☐ Standard
☐ MIS

DRAIN ☐ No ☐ Yes

BONE GRAFT ☐ No ☐ Yes

TYPE OF ANAESTHESIA

☐ General ☐ Spinal ☐ Epidural
☐ General + Epidural
☐ Spinal + Epidural

APPROACHES

☐ Extended Trochanteric Osteotomy
☐ Extensile Approach
☐ Anterior (Smith Peterson)
☐ Anterolateral (Watson Jones)
☐ Lateral (Hardinge)
☐ Posterior (Southern)

12. ADVERSE INTRA OPERATIVE EVENT

☐ Fracture ☐ Nerve Injury
☐ Vascular Injury ☐ Abductor avulsion injury Others

13. THROMBOPROPHYLAXIS

CHEMICAL ☐ NO ☐ YES

☐ LMWH ☐ Pentasaccharide ☐ Warfarin
☐ Direct Thrombin Inhibitor ☐ Aspirin
 Other

MECHANICAL ☐ NO ☐ YES

☐ Foot Pump ☐ T.E.D Stocking
☐ Intermittent Calf Compression
 Other

PNJR-Protocol V 1.0- Hip form-version# 2.0-Date: January 25th, 2014



PNJR No.....

14. ANTIBIOTIC

Generic	Route	Duration (Days)
1	IV / Oral
2	IV / Oral

15. POST-OP PAIN MANAGEMENT

☐ PCA (days)..... ☐ Epidural (days)..... ☐ Nerve Block (days).....
☐ Intra-Op Local ☐ IV (days).....
☐ IM (days)..... ☐ Oral (days).....

16. IMPLANT DETAILS

IMPLANT DESIGN

☐ All Cement ☐ Hybrid ☐ Uncemented ☐ Resurfacing ☐ Dual Mobility

HEAD SIZE

☐ 22 ☐ 28 ☐ 32 ☐ 36 ☐ Large head

BEARING SURFACE

☐ Metal on poly ☐ Metal on crosslink poly ☐ Ceramic on poly ☐ Dual Mobility
☐ Ceramic on ceramic ☐ Metal on metal ☐ Ceramic on crosslink poly

CEMENTED CUP

☐ All poly ☐ Long posterior wall ☐ Constrained ☐ Dual Mobility

CEMENTED FEMORAL COMPONENT

☐ Modularity ☐ Non modular ☐ Modular
☐ Collar ☐ Collared ☐ Collar less
☐ Surface ☐ Smooth ☐ Coated
☐ Shape ☐ Straight ☐ Double tapered ☐ Flanged

CEMENTING TECHNIQUE

☐ Vacuum mixing ☐ Cement restrictor ☐ Stem centralizer
☐ Pulse lavage ☐ Cement gun ☐ Proximal pressurizer

UNCEMENTED CUP

☐ Hemisphere ☐ Porous coated ☐ HA coated ☐ With spikes ☐ Dual Mobility
☐ Double cup ☐ Jumbo cup ☐ Screw ☐ No ☐ Yes No.

UNCEMENTED FEMORAL COMPONENT

☐ Press fit ☐ Porous coated ☐ HA coated ☐ Plasma coated
☐ Wagner ☐ Modular ☐ Fiber metal mesh ☐ Small stem

ACCESSORIES COMPONENT

☐ Reconstruction ring ☐ Burch-Schneider cage
☐ Greater trochanteric grip ☐ Cable ☐ Wire
☐ Trabecular metal augment Others.....

A - FEMORAL HEAD COMPONENT

☐ No ☐ Yes
 Company
 Prosthesis Name.....
 Cat/Ref #..... Size

A - FEMORAL STEM COMPONENT

☐ No ☐ Yes
 Company Company
 Prosthesis Name..... Prosthesis Name.....
 Cat/Ref #..... Size Cat/Ref #..... Size

FEMORAL CEMENT: ☐ No ☐ Yes

CEMENT NAME:

B - ACETABULUM COMPONENTS

☐ No ☐ Yes
 Company Company
 Prosthesis Name..... Prosthesis Name.....
 Cat/Ref #..... Size Cat/Ref #..... Size

ACETABULUM CEMENT: ☐ No ☐ Yes

CEMENT NAME:

17. COMPUTER ASSISTED

☐ No ☐ Yes System Used

18. POST-OP REHABILITATION PROTOCOL

☐ Non weight bearing ☐ Full weight bearing ☐ Death.....

Completed by: Date

Signature:

PNJR-Protocol V 1.0- Hip form-version# 2.0-Date: January 25th, 2014



Date:...../...../.....

HIP FOLLOW-UP FORM

PATIENT DETAILS

PNJR No.....

Surname..... Given Name..... CNIC #.....

Tel / Cell #..... Hospital..... Surgeon.....

Date of Surgery..... THR (L/R)..... Hospital Reg. #.....

FOLLOW-UP VISIT

- | | | | |
|-----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> 2 Weeks | <input type="checkbox"/> 6 Weeks | <input type="checkbox"/> 3 Months | <input type="checkbox"/> 6 Months |
| <input type="checkbox"/> 1 Year | <input type="checkbox"/> 5 Years | <input type="checkbox"/> 10 Years | <input type="checkbox"/> 15 Years |
| <input type="checkbox"/> 20 Years | Others..... | | |

HARRIS HIP SCORE (0-100).....

COMPLICATIONS

- | | | |
|--------------------------------------|---|------------------------------------|
| <input type="checkbox"/> Hematoma | <input type="checkbox"/> Wound Dehiscence | <input type="checkbox"/> Infection |
| <input type="checkbox"/> Dislocation | <input type="checkbox"/> DVT | <input type="checkbox"/> PE |
| <input type="checkbox"/> Nerve Palsy | <input type="checkbox"/> Fracture | <input type="checkbox"/> Others |

Surgeon Comments.....

.....

.....

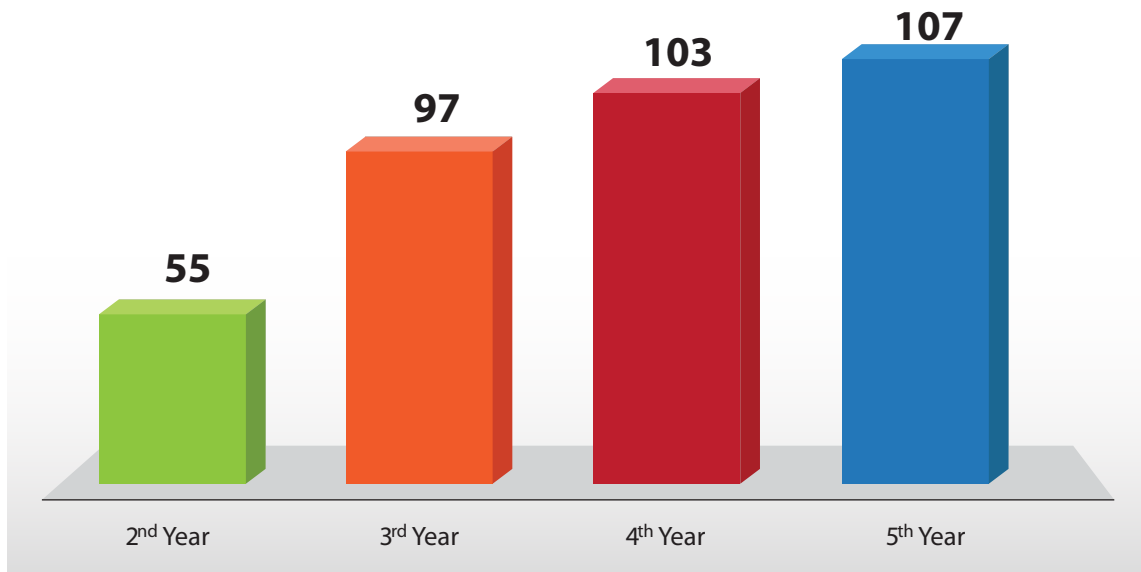
Completed by:.....

Signature:

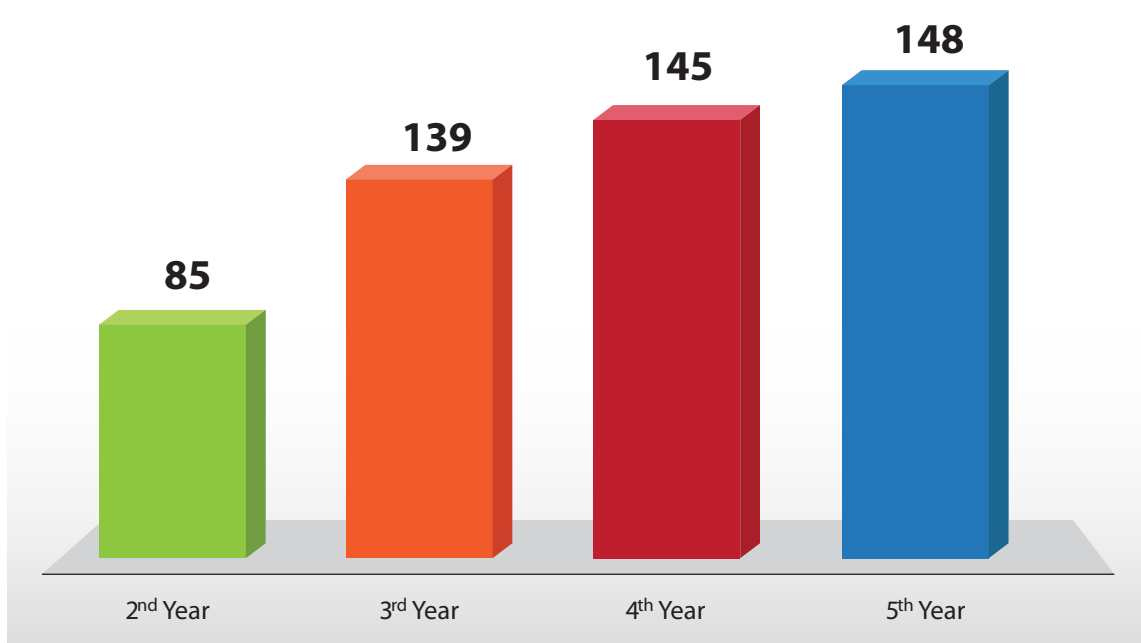
SECTION II

Upgrades in the Data Collection

Growth in Number of Hospitals



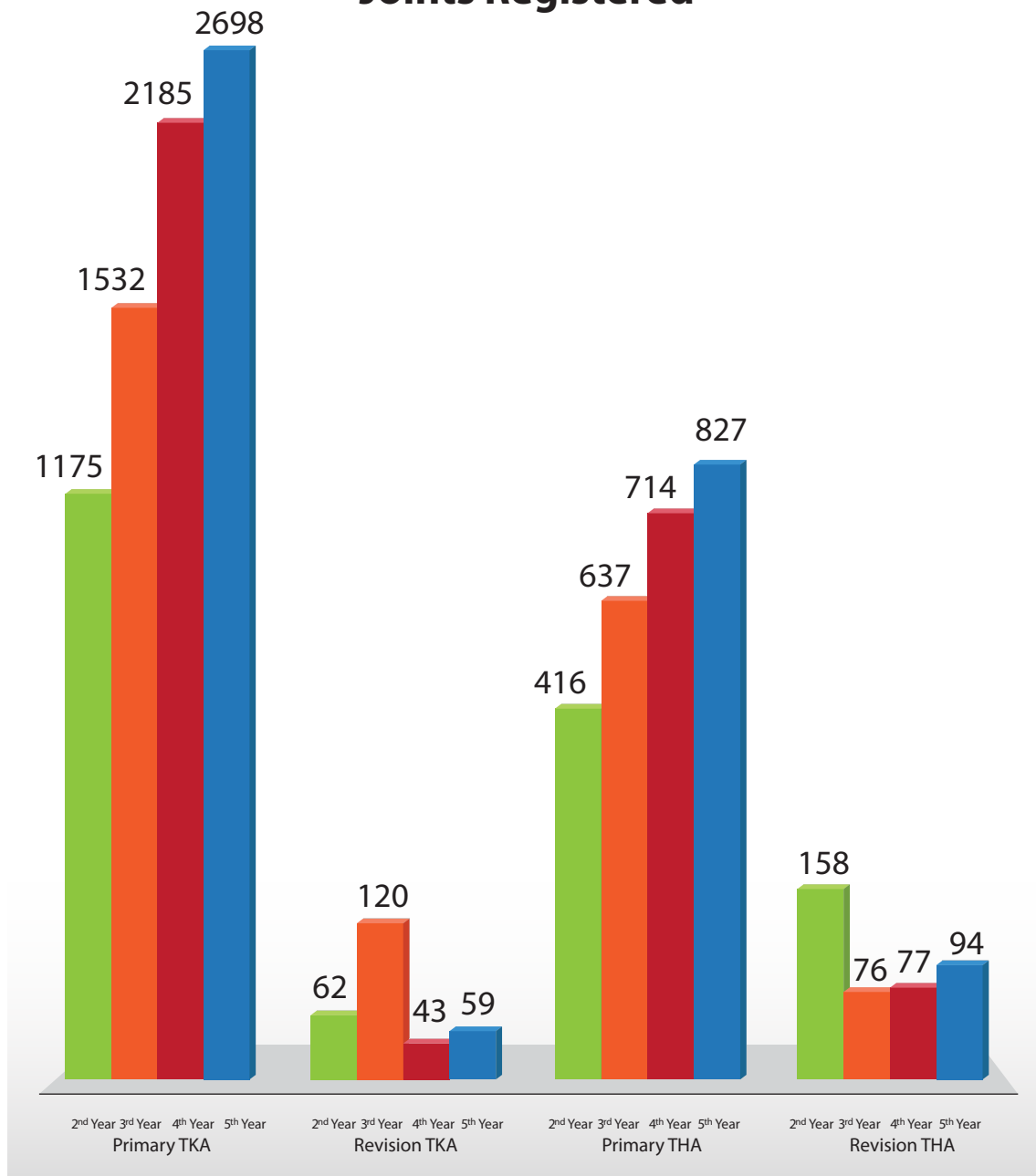
Growth in Number of PI's

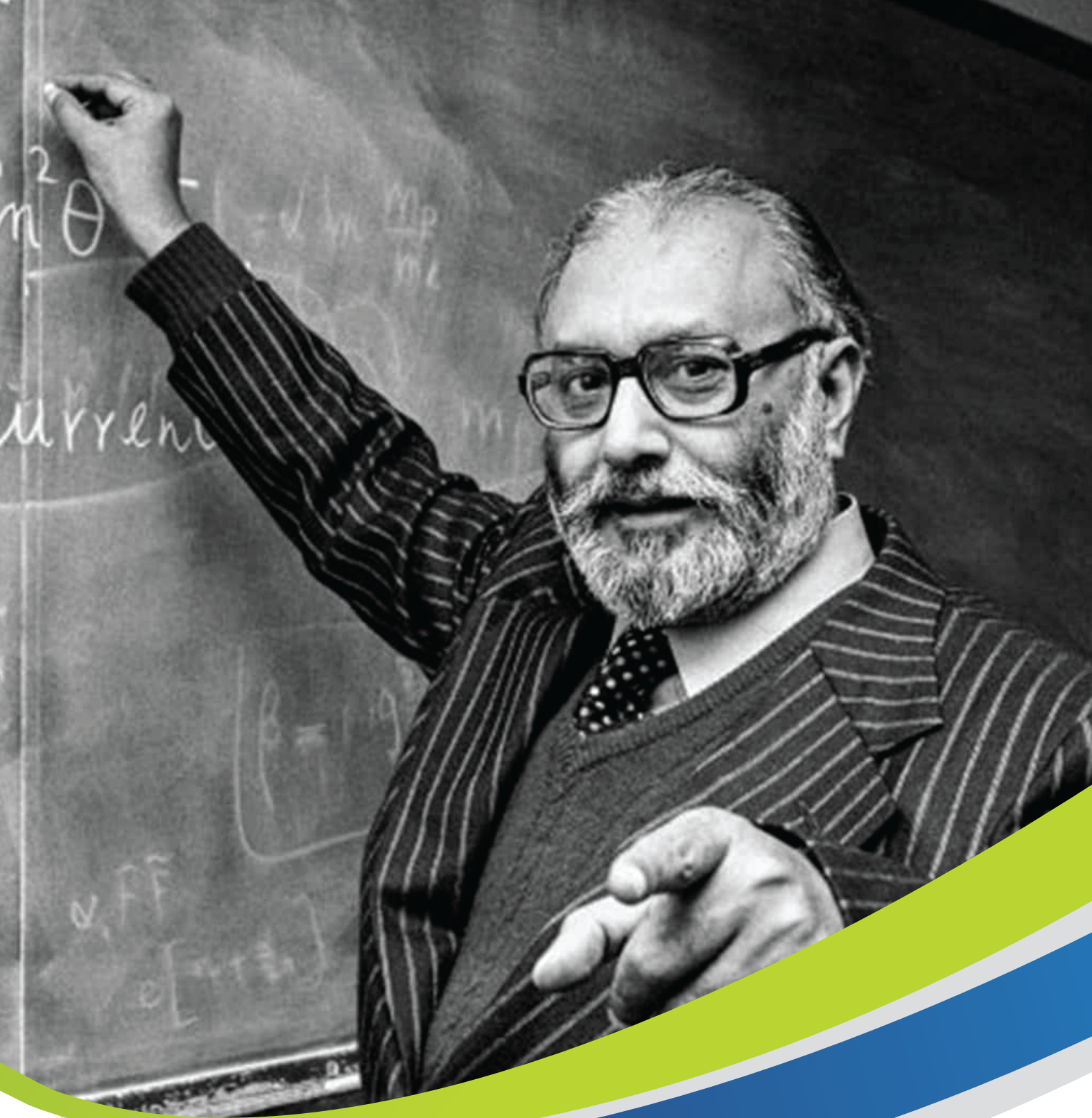


SECTION II

Upgrades in the Data Collection

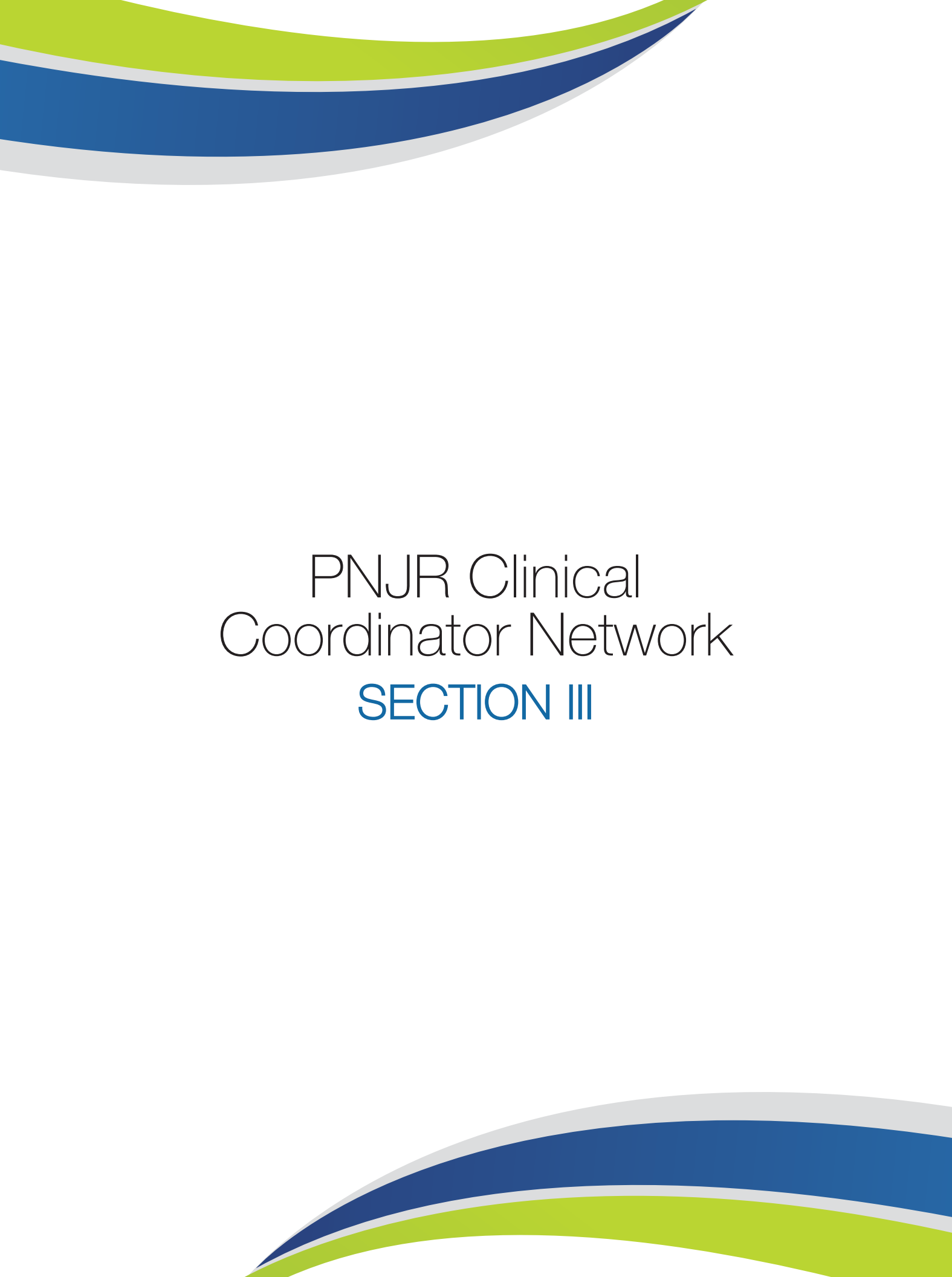
Growth in Total Number of Joints Registered





Abdus Salam

Abdus Salam was a Pakistani theoretical physicist who won a Nobel Prize in Physics for his contribution to 'electroweak unification' in 1979. He is the first Pakistani to receive a Nobel Prize.



PNJR Clinical Coordinator Network

SECTION III



Mahbub ul Haq

Mahbub ul Haq was a Pakistani game theorist, economist and an international development theorist who served as the 13th Finance Minister of Pakistan from 10 April 1985 until 28 January 1988.

In 1988 in U.S., he served as the Special Adviser to the UNDP Administrator William Henry Draper. Here, Haq led the establishment of Human Development Report which includes the now popular “Human Development Index”, which measures development by people's well-being, rather than by their income alone. He returned to Pakistan in 1996 to establish the Human Development Center in Islamabad.

SECTION III



PNJR Clinical Coordinator Network

"Metrics Research Pvt. Ltd. is a reputed Clinical Research Organization established since 2003, providing Clinical Research Services to well recognized medical societies, hospitals, pharmaceutical and clinical research companies all across the globe. Metrics Research specializes in Clinical Registries, Surveillance studies, Statistical analysis through SPSS and SAS with professional writings, Phase Trials from Phase I to Phase IV and as well as Bio-Equivalence Studies.

Metrics have highly qualified, trained and experienced clinical research professionals for the execution of services that they offer to their respective clients. Metrics Research took PNJR registry as a challenge and with the experience and qualified professional including CRA's, Coordinator and Medical writers made this dream true. Metrics Research is responsible for training of new PI or Co-PI, Data entry facilitators and Also responsible for the monitoring of data. Metrics Research experienced and qualified medical writers are involved in data analysis and annual report writing as per international guide lines."

Supporting Team

Mr. Faisal Farooq

Supporting Team



Mr. Syed Khalid Mansoor

Supporting Team



Dr. Arif Muneer

Supporting Team



Team Members

Mr. Syed Munawar Ali (CCRP)

Director Coordinator PNJR



Ms. Yasmeen Fazal

CRC Team Lead



Dr. Talha Javed

CRC Lahore



Muhammad Asim

Lead Developer and
PNJR Application Manager



Mr. Ali Hyder Qureshi

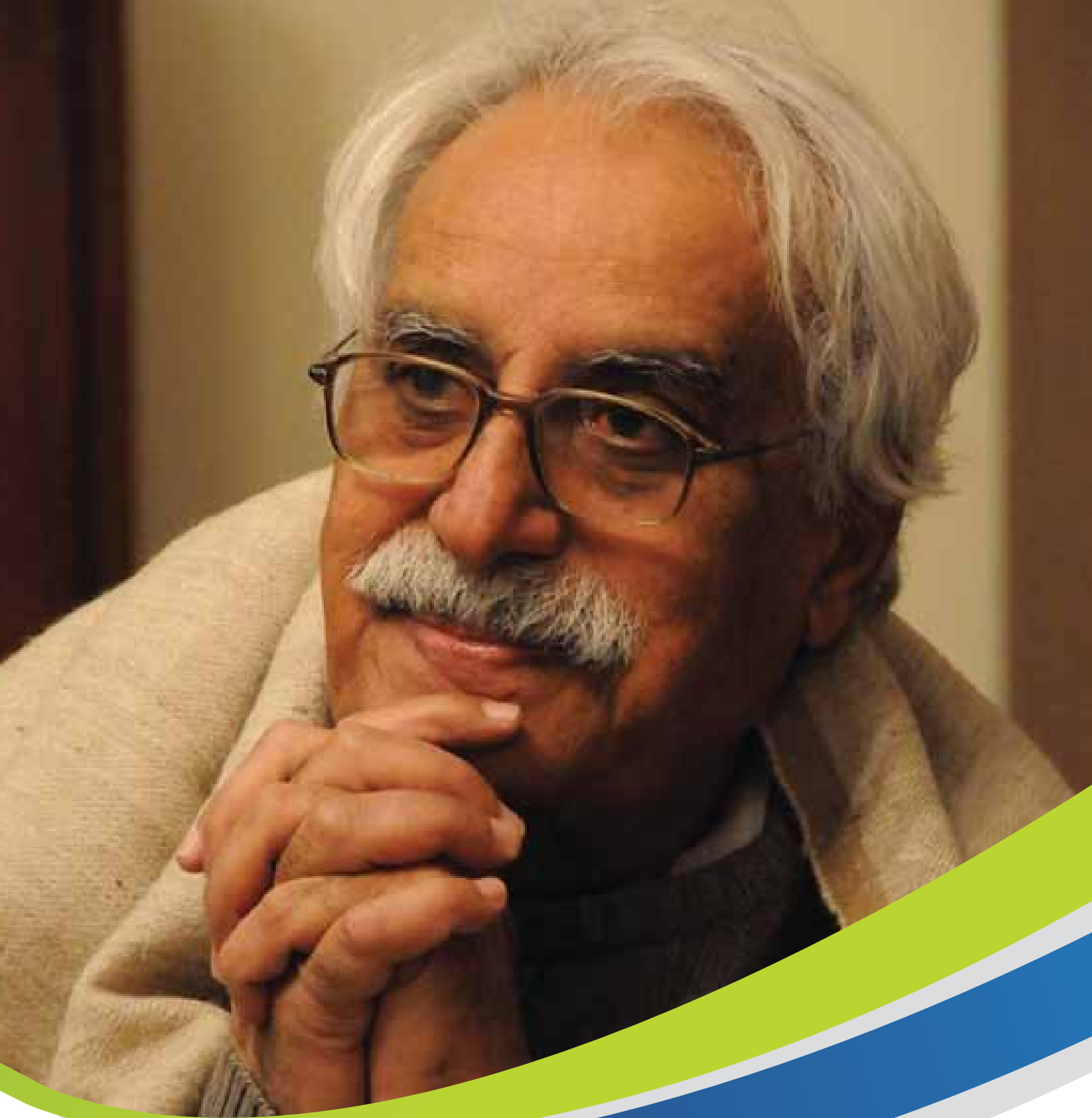
Supporting Team



Mr. Naeem Khan

Supporting Team





Abdullah Sadiq

Abdullah Sadiq, PhD, Sitara-e-Imtiaz (born 1940), is a Pakistani physicist and ICTP laureate who received the ICTP Prize in the honour of Nikolay Bogolyubov, in the fields of Mathematics and Solid State Physics in 1987 for his contributions to scientific knowledge in the field of Mathematics and Statistical physics. He is the professor of physics and current Dean of the Department of Physics of the Air University of the Pakistan Air Force (PAF).

Sadiq is also a renowned educationist of Pakistan with a specialisation in nuclear physics, solid-state physics, and computer programming. He has been a distinguished professor of nuclear physics and solid state physics in many universities of Pakistan.



PNJR
Partnership with HRAB
SECTION IV



Sultan Bashiruddin Mahmood

Sultan Bashiruddin Mahmood is a Pakistani nuclear engineer. He has been an important part of Pakistan Atomic Energy Commission and regarded for development of the SMB probe to detect heavy water leaks in nuclear power plants.

SECTION IV

PNJR Partnership with HRAB

Health Research Advisory Board (HealthRAB) a registered society, is a “think tank” of senior clinicians, researchers & academicians who are committed to the mission of HealthRAB which is to **“Develop the Research Ecosystem of Pakistan”**.

The main objectives of HealthRAB are to:

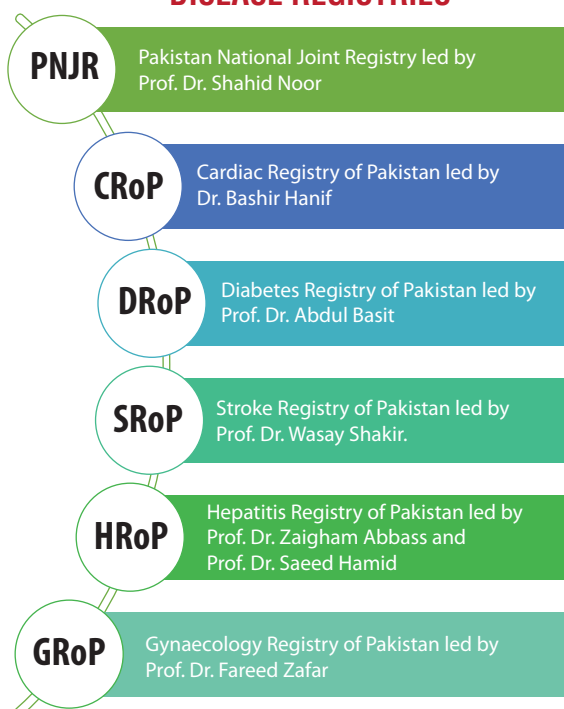
- Provide leadership for developing the medical research ecosystem of Pakistan
- Create synergy among the existing stakeholders and bring them together
- Build capacity of the healthcare professionals involved in conducting research
- Collaborate & network locally as well as globally to initiate research activities
- Facilitate the development and implementation of a national research policy

Leadership:

- | | |
|---------------------------------|-----------------------------|
| • Prof. Dr. Abdul Gaffar Billoo | Chairman |
| • Prof. Dr. Abdul Basit | Vice Chairman |
| • Dr. Zakiuddin Ahmed | General Secretary |
| • Prof. Syed Shahid Noor | Chairman Registry Committee |

Projects & Activities:	
1	Online Research Course (ORC).
2	Research Reference Guide (RRG).
3	Research Assembly (RA).
4	National Research Policy Document.
5	Disease Registries.
6	MLS, RM and SPSS Workshops.
7	Research Webinars.
8	Clinical Research Center Workshop (CRC).
9	Student Chapters.
10	Research Fund (RF).

DISEASE REGISTRIES



SECTION II

PNJR Partnership with HRAB



1st Research Excellence Award at CardioCon 2016 at Hotel Serena, Faisalabad on 25th -27th Nov, 16.



Poster Competition at 11th SAFOG Conference at Lahore on 17th – 19th March, 2017.



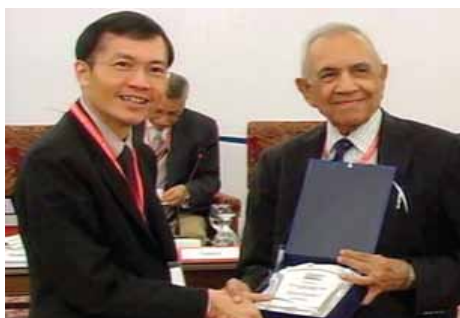
Clinical Research Center Workshop (CRCs) at Mohtarma Benazir Bhutto Medical College.



Joint Technical Working Group for Medical Research Activities



Webinar by Prof. Dr. Syed Shahid Noor held on 4th March, 17.



Prof. Dr. Abdul Ghaffar Billoo presenting shield to Prof. Dr. Lawrence



HealthRAB's Board Meeting



1st International Medical Research Conference - IMRC



PNJR
Stake Holders Network
SECTION V



Naveed Zaidi

Organic Chemist and Polymer Scientist Naveed Zaidi developed world's first plastic magnet that functions at room temperature. Along with his colleagues Prof. Andy Monkman, Mr. Sean Giblin and Dr. Ian Terry from Department of Physics of Durham University, research took 4 years making him first scientist to develop world's first practical plastic magnet.

SECTION V

PNJR Stake Holders Network

Pakistan National Joint Registry could not have been formed without the commitments of its valuable stake holders. Each stake holder support and cooperation has enabled us to achieve our 1st year targets. There are number of stake holders but the following few are most significant:

I Pakistan Arthroplasty Society

The board and members of Pakistan Arthroplasty Society take full ownership of PNJR project and have extended their extensive human and financial resources for the realization of this project. All financial funding for PNJR is exclusively supported by PAS.

II Patients

Patients are at the center of all we do. Without the contribution of our patients, we would not have achieved this 1st annual report. We believe that their contribution will take us to newer heights in scientific research to benefit the masses in general. PNJR steering committee extends their thanks to all those patients who have contributed to this first annual report.

III Research/Registry development partners

Metrics Research Pvt. Ltd

Metrics Research took this project as a challenge and devotedly provided its services in designing of protocol, CRF, ICF, data entry and data analysis. The experienced trained team members assisted PNJR in every step of development and publication

Collage Solutions

Collage Solutions with an extensive knowledge and experience in data management, EDC, eCRF, CTMS design and development provided the expertise to develop PNJR registry database. These provide services

from data management, data tracking, data backup and cleaning to complete audit trails, reports/graph generation, dataset building for SAS/SPSS analysis. They also help in resolving technical site issues and provide training and support to maintain "Data Quality".

IV Affiliated Institutions / Clinical Sites

Institutes are the back bone of any clinical research activity. All our registered hospitals are supporting us in providing: access to patient data, logistics for data entry, utilities and use of their valuable and reputable name.

Sindh

Karachi

1. Liaquat National Hospital & Medical College
2. The Aga Khan University and Hospital
3. The Indus Hospital
4. Institute of Orthopaedic & Surgery
5. Ziauddin University and Hospital Clifton
6. Jinnah Postgraduate Medical Centre
7. Civil Hospital, Dow University of Health Sciences
8. Abbasi Shaheed Hospital
9. Dow International Medical College, DUHS
10. Medicare Cardiac & General Hospital
11. South City Hospital
12. AO Clinic
13. Ashfaq Memorial Hospital
14. Combined Military Hospital
15. Darul Sehat Hospital
16. National Medical Center
17. Orthopaedic & Medical Institute OMI
18. Fatimiyah Hospital
19. Hamdard Hospital
20. TO Clinic
21. Hill Park General Hospital
22. Jinnah Medical & Dental Hospital
23. KPT Hospital
24. Ankle Saria Hospital
25. Mamji Hospital
26. Burhani Hospital
27. Memon Medical Institute Hospital
28. Neurospinal & Cancer Care Institute
29. Park Lane Hospital

SECTION V

PNJR Stake Holders Network

- 30. Patel Hospital
- 31. PNS Shifa – Bahria University Medical & Dental College
- 32. Saifee Hospital
- 33. Karachi Adventist Hospital (7th Day Hospital)
- 34. Zubaida Medical Centre
- 35. The SNBB Truma Centre
- 36. Imam Clinic
- 37. Lyari General Hospital
- 38. Aiwan-e-Tijarat-o-Sanat Hospital Trust
- 39. Dr. Ziauddin Hospital (North)
- 40. Chiniot Hospital Korangi

Hyderabad

- 41. Bone and Joints Hospital
- 42. LUMHS Hospital Jamshoro

Larkana

- 43. Chandka Medical College & Shaheed Benazir Bhutto Medical Institute

Nawabshah

- 44. Nawabshah Medical College & Hospital
- 45. Shafique Medical Center
- 46. Mastoi Medicare

Sukkur

- 47. Bhatti Hospital
- 48. Sukkur Blood Bank Hospital
- 49. Gambat Pir Abdul Qadir Shah Jilani Institute of Medical Sciences

Punjab

Lahore

- 50. Ghurki Trust Teaching Hospital
- 51. King Edward Medical University (KEMU)
- 52. Combine Military Hospital
- 53. Doctors Hospital
- 54. Shalamar Medical College
- 55. Jinnah Hospital
- 56. Allama Iqbal Medical College
- 57. Lahore General Hospital

- 58. Sheikh Zayed Hospital
- 59. Shoukat Khanum Hospital
- 60. Services Institute of Medical Sciences (SIMS)
- 61. Horizon Hospital
- 62. Sir Ganga Ram Hospital
- 63. Masood Hospital
- 64. Govt. Nawaz Sharif Hospital
- 65. Family Hospital
- 66. Mid City Hospital Jail Road
- 67. National Hospital Defence Lahore
- 68. Services Hospital
- 69. Wapda Teaching Hospital
- 70. Wah Medical College & POF Hospital

Islamabad / Rawalpindi

- 71. Shifa International Hospital
- 72. Quaid-e-Azam International Hospital
- 73. Combined Military Hospital
- 74. Shaheed Zulfikar Ali Bhutto Medical University
- 75. Kulsum International Hospital
- 76. Ali Medical Centre
- 77. Maroof International
- 78. NESCOM Hospital
- 79. KRL Hospital
- 80. Benazir Bhutto Hospital
- 81. Capital Hospital
- 82. DHQ Hospital
- 83. Fauji Foundation Hospital
- 84. National Institute of Rehabilitation Medicine
- 85. OGDCL Medical Centre
- 86. Rawalpindi Medical College

Multan

- 87. Nishtar Medical College & Hospital
- 88. Combined Military Hospital
- 89. Fatima Medical Center

Bahawalpur

- 90. Bahawal Victoria Hospital
- 91. Cheema Hospital

Faisalabad

- 92. Allied Hospital

SECTION V

PNJR Stake Holders Network

Gujranwala

- 93. Chattha Hospital
- 94. District Head Quarter Hospital
- 95. Med Care Hospital

Sialkot

- 96. Combined Military Hospital

Kharian

- 97. Combined Military Hospital

Rahim Yar Khan

- 98. Sheikh Zayed Medical College and Hospital

Khyber Pakhtunkhwa

Peshawar

- 99. Hayatabad Medical Complex
- 100. Khyber Teaching Hospital
- 101. North West General Hospital, Hayatabad
- 102. Rehman Medical Institute
- 103. Aman Hospital, Civil Quarters

Abbottabad

- 104. Ayub Medical College

Baluchistan

Quetta

- 105. Bolan Medical College
- 106. Doctors Hospital
- 107. Akram Hospital

V Principal Investigators

Surgeons who strive hard to enter the data and keep the registry ticking are what keeps this registry alive. Following is the list of our registered investigators.

Sindh

Karachi

- 1. Prof. Syed Shahid Noor
- 2. Prof. Muhammad Umar
- 3. Prof. Zaki Idrees
- 4. Prof. Muhammad Amin Chinoy
- 5. Prof. Mansoor Ali Khan
- 6. Prof. Anisuddin Bhatti
- 7. Prof. Maratib Ali
- 8. Prof. Pervez Anjum
- 9. Prof. Intikhab Taufiq
- 10. Prof. Imtiaz Ahmed Hashmi
- 11. Prof. Syed Kamran Ahmad
- 12. Prof. Ghulam Mustafa Kaim Khani
- 13. Prof. Asif Qureshi
- 14. Prof. A R Jamali
- 15. Dr. Masood Umer
- 16. Dr. Riaz Hussain Lakdawala
- 17. Dr. Pervaiz Hashmi
- 18. Dr. Sharyar Noordin
- 19. Dr. Mujahid Jamil
- 20. Dr. Nasir Ahmad
- 21. Dr. Aslam Pervez
- 22. Dr. Imran Ali Shah
- 23. Dr. Sohail Rafi
- 24. Dr. Tashfeen Ahmed
- 25. Dr. M. Ather Siddiqi
- 26. Dr. M. Asif Peracha
- 27. Dr. Syed Amir Ali Shah
- 28. Dr. S. Ghazanfar Ali Shah
- 29. Dr. M. Kazim R. Najjad
- 30. Dr. Muhammad Sufyan
- 31. Dr. Arshad Qamar
- 32. Dr. Idrees Shah
- 33. Dr. Farooq Mamji
- 34. Dr. Iqbal Malik
- 35. Dr. Syed Itaati Zaidi
- 36. Dr. Syed Muhammad Khalid Karim

SECTION V

PNJR Stake Holders Network

- 37. Dr. Lt. Col Waris Ali Shah
- 38. Dr. Lt. Col Syed Faraz Anwar
- 39. Dr. Mirza Mohsin Ali Jah
- 40. Dr. Jagdesh Kumar
- 41. Dr. Arshad Jamil
- 42. Dr. Akram M. Aliuddin
- 43. Dr. Syed Danish Ali
- 44. Dr. Sabih Nasar

Hyderabad

- 45. Dr. Rais Parvaiz

Larkana

- 46. Prof. Asadullah Mahar
- 47. Dr. Zamir Soomro
- 48. Dr. Azizullah Bhayo
- 49. Dr. Abdul Malik Shaikh

Nawabshah

- 50. Prof. Zulfiqar Ali Mastoi
- 51. Dr. Saeed Samo

Sukkur

- 52. Prof. Anisuddin Bhatti
- 53. Dr. Zulfiqar Ali Soomro
- 54. Dr. Sohail Jokhyo

Punjab

Lahore

- 55. Prof. Ghazanfar Ali Shah
- 56. Prof. Amer Aziz
- 57. Prof. S. Muhammad Awais
- 58. Prof. Abu Bakar Siddiq
- 59. Prof. Rana Dilawaiz Nadeem
- 60. Brig. Prof. Sohail Amin
- 61. Prof. Muhammad Abdul Wajid
- 62. Prof. Naeem Ahmed
- 63. Prof. Shahzad Javed
- 64. Prof. Irfan Mehboob
- 65. Prof. Yawar Anis

- 66. Prof. Shafique Ahmad Shafaq
- 67. Prof. Rana M. Arshad
- 68. Prof. Ali Raza Hashmi
- 69. Prof. Tahseen Riaz
- 70. Dr. Ahsan Shamim
- 71. Dr. Mian Muhammad Hanif
- 72. Dr. Faisal Qamar
- 73. Dr. Syed Kashif Mehdi
- 74. Dr. Sher Afgan
- 75. Dr. Rizwan Akram
- 76. Dr. Muhammad Naveed
- 77. Dr. Muhammad Akhtar Malik
- 78. Dr. Mohammad Fahim Iqbal
- 79. Dr. Khurram Sadat
- 80. Dr. Javed Iqbal
- 81. Dr. Ijaz Ahmad
- 82. Dr. Faisal Masood
- 83. Dr. Atiquz Zaman
- 84. Dr. Abdullah Shah
- 85. Dr. Rashid

Islamabad / Rawalpindi

- 86. Prof. Maj. Gen. Sohail Hafeez
- 87. Prof. Khalid Aslam
- 88. Prof. Riaz Ahmed Shaikh
- 89. Prof. Nayyar Qayyum
- 90. Prof. Muhammad Salim
- 91. Brig. Dr. Syed Arsalan Haider Bukhari
- 92. Dr. Aamir Nabi Nur
- 93. Dr. Farid Ullah Khan Zimri
- 94. Dr. Irfan Masood
- 95. Dr. Syed Shujaat Ali Shah
- 96. Dr. Shaheen Iqbal
- 97. Dr. Sajjad Orakzai
- 98. Dr. Rizwan Hameed Malik
- 99. Dr. Riffat Mehmood
- 100. Dr. Nouman Maqbool
- 101. Dr. Moghees Ikram Ameen
- 102. Dr. Ali Shami
- 103. Dr. Ali Khokhar
- 104. Dr. Ali Akhter

SECTION V

PNJR Stake Holders Network

- 105. Dr. Abidullah Khan Niazi
- 106. Dr. Obaid-ur-rehman
- 107. Dr. Asim Niaz Naqvi
- 108. Dr. Abdul Basit
- 109. Dr. Syed Sajid Hussain
- 110. Dr. Faheem Khan

Multan

- 111. Dr. Khalil Ahmed Gill
- 112. Dr. Col. Sohail Muzammil
- 113. Dr. Mohammad Kamran Siddiqi
- 114. Dr. Muhammad Jehangir Riaz

Bahawalpur

- 115. Prof. Tehseen Cheema
- 116. Prof. Rafiq Sabir
- 117. Dr. Hafiz Muhammad Akram

Faisalabad

- 118. Prof. Ajmal Yasin
- 119. Dr. Khurram Habib

Gujranwala

- 120. Dr. Hafiz Ahmad Fayyaz
- 121. Dr. Ahmed Masood Ghumman
- 122. Dr. Faisal Iqbal Chaudhry

Sialkot

- 123. Dr. Shahid Munir

Kharian

- 124. Dr. Nisar Ahmed

Rahim Yar Khan

- 125. Prof. Muhammad Azeem
- 126. Dr. Abdul Rauf Chaudhry

Khyber Pakhtunkhwa

Peshawar

- 127. Prof. Zafar Durrani
- 128. Prof. Muhammad Arif Khan
- 129. Prof. Zahid Askar
- 130. Prof. Raja Irfan Qadir
- 131. Prof. Khushnood Ali Baz
- 132. Prof. Malik Javed
- 133. Prof. Ayaz Khan
- 134. Dr. Zeeshan Khan
- 135. Dr. Syed Imran Bukhari
- 136. Dr. Israr Ahmad
- 137. Dr. Ghulam Atiq
- 138. Dr. Awal Hakeem
- 139. Dr. Waseem Anwer

Abbottabad

- 140. Dr. Alamzeb Khan

Baluchistan

Quetta

- 141. Prof. Qazi Masood
- 142. Dr. Saleh Muhammad Tareen
- 143. Dr. Muhammad Baksh Shahwani
- 144. Dr. Attiq Ur Rehman
- 145. Dr. M. Tariq Hasni

SECTION II

PNJR Stake Holders Network

Implant Suppliers





Consolidating Performance and Compliance

SECTION VI



Amjad Farooq and Basit Farooq

They made world's first computer virus in 1986. It was made for MS-DOS operating systems. The virus used to infect the boot sector of storage media formatted with the DOS File Allocation Table (FAT) file system. This virus was supposed to stop and track illegal copies of their disk

SECTION VI

Consolidating Performance and Compliance

We are proud of our achievements over the past 5 years. PNJR has been the jewel of our eyes and seeing it prosper and grow is very near and dear to the founding members of PAS and PNJR. Nevertheless, It is easy to become complacent and we shall lost on what has been achieved in a very short span of time. Therefore, we have started focusing on sustainability. We are taking the following steps in training and development to make this registry self sustainable.

In future, the steering committee has the following vision for the growth of the PNJR.

1. Leadership training. We are training the next generation of arthroplasty surgeons to take up leadership roles in PAS and PNJR steering committee. Change of leadership is inevitable and the earlier the new leaders are identified, the sooner they can be groomed to take up leading positions and continue the good work set up by the ofunding members.

2. Data entry and quality management. Automated enrty of implant data using bar code readers is established in high volume centers. Automatically generated performace reports on quarterly basis are issued to users and the steering committee on as need basis for monitoring and quality assurance. We have a quality control and monitoring cell. With the ever increasing number of users, and upgradation of the registry. A monitoring unit is essential to ensure that the data being entered is of sufficient quality to merit analysis. Without this we believe that the registry will cease to have scientific value over time

3. Elevating the status of PNR to a compulsory national register. Currently we are a voluntary register. The next step is to get a government approval for conversion of this registry to a national government run and funded compulsory register. This will elevate not the only status but the credibility of the data and we would then truly reperesnt all joint surgeons in Pakistan. As mentioned before, we envision to establish a governing body. This will enable us in making not only PNJR but also other healthcare registries compulsory so that we can produce credible national data on disease prevalence, treatment modalities and patient outcomes.

We sincerely hope and prey that our concerted effort continues to bear fruit in the future and help develop the culture of research and innovation in the country that we originally planned for.



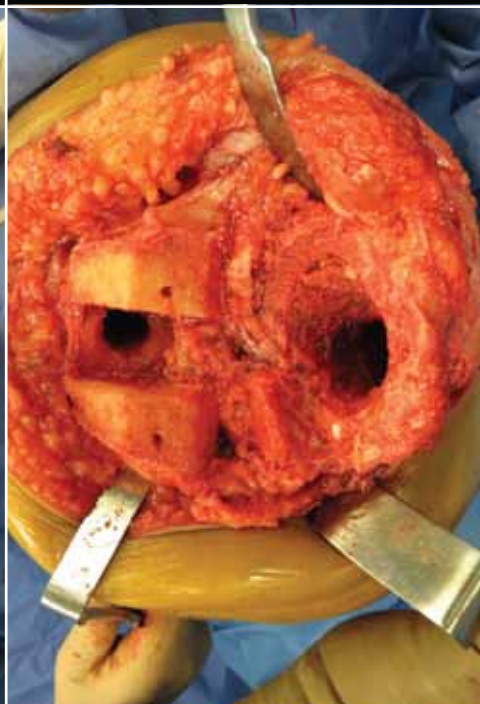
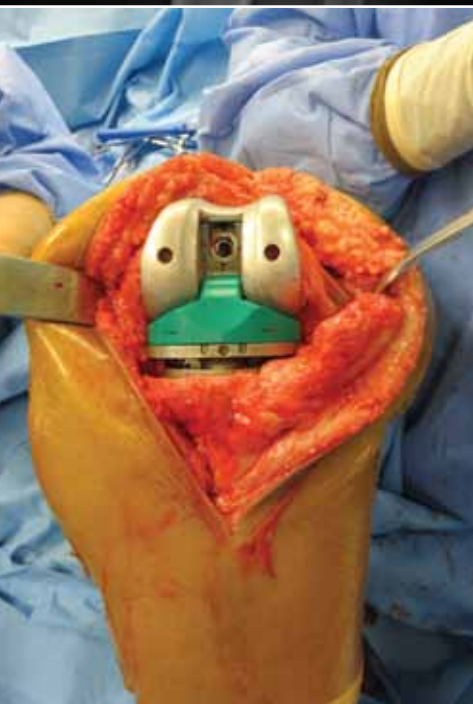
Data Analysis and Reporting
PART 2
PNJR 5th Annual Report





Primary
Total Knee Arthroplasty
SECTION I

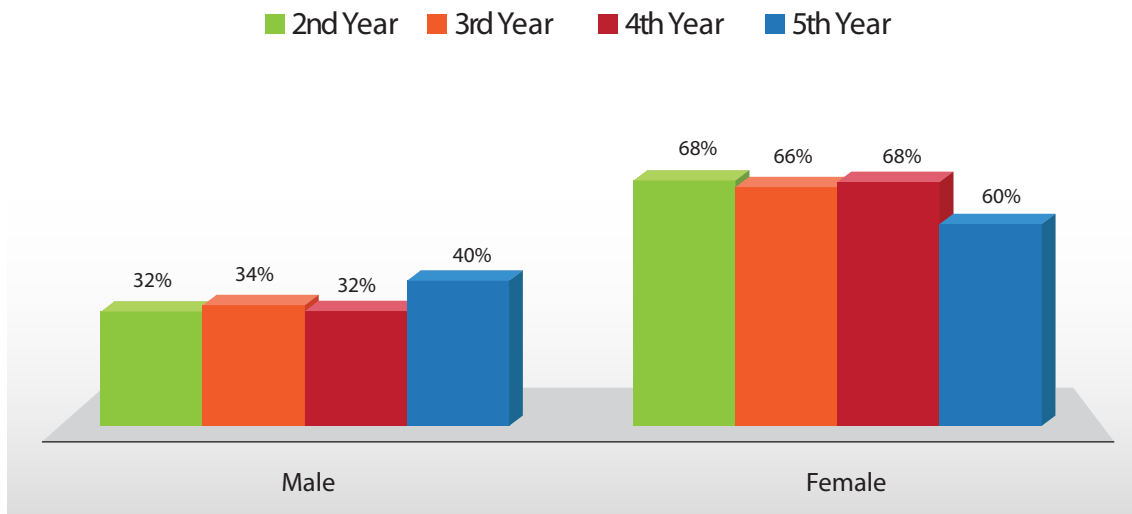




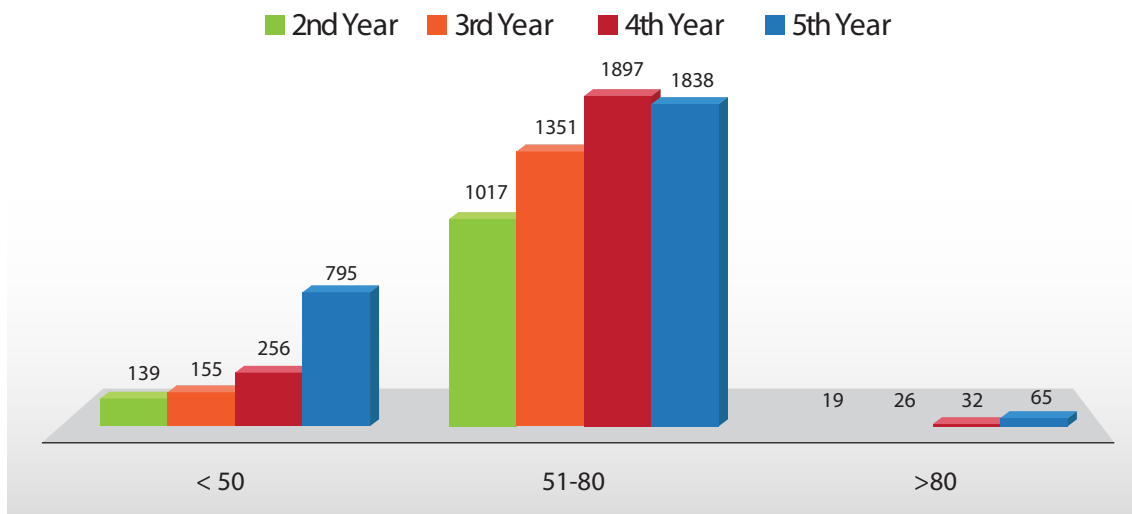
SECTION I

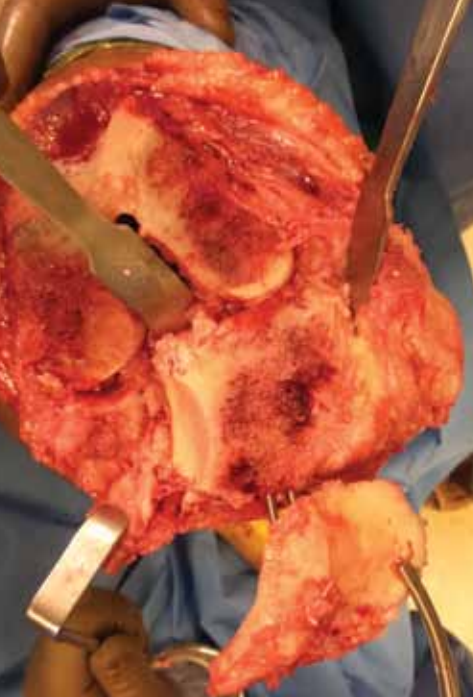
Primary Total Knee Arthroplasty

Gender Distribution



Age Category

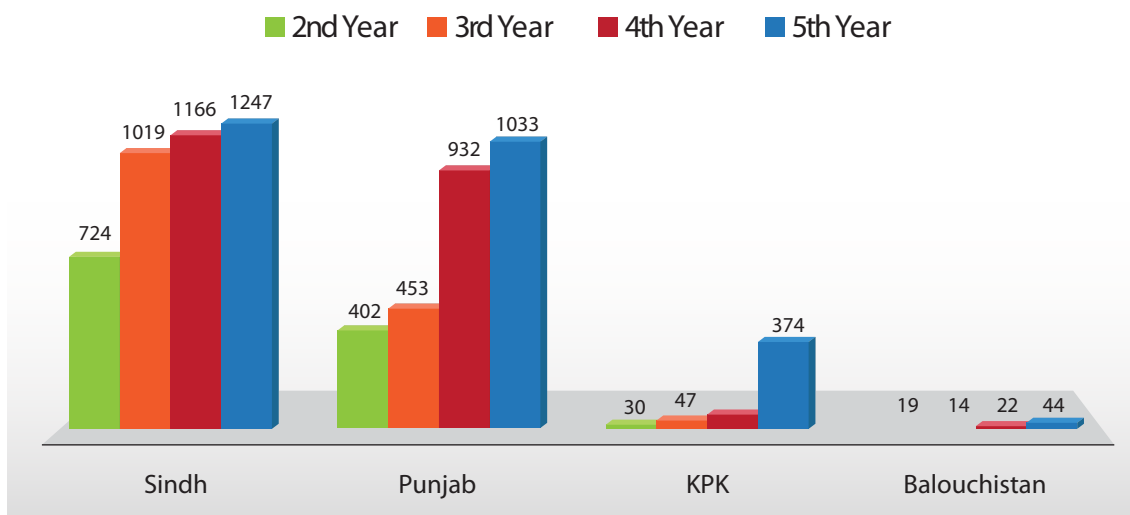




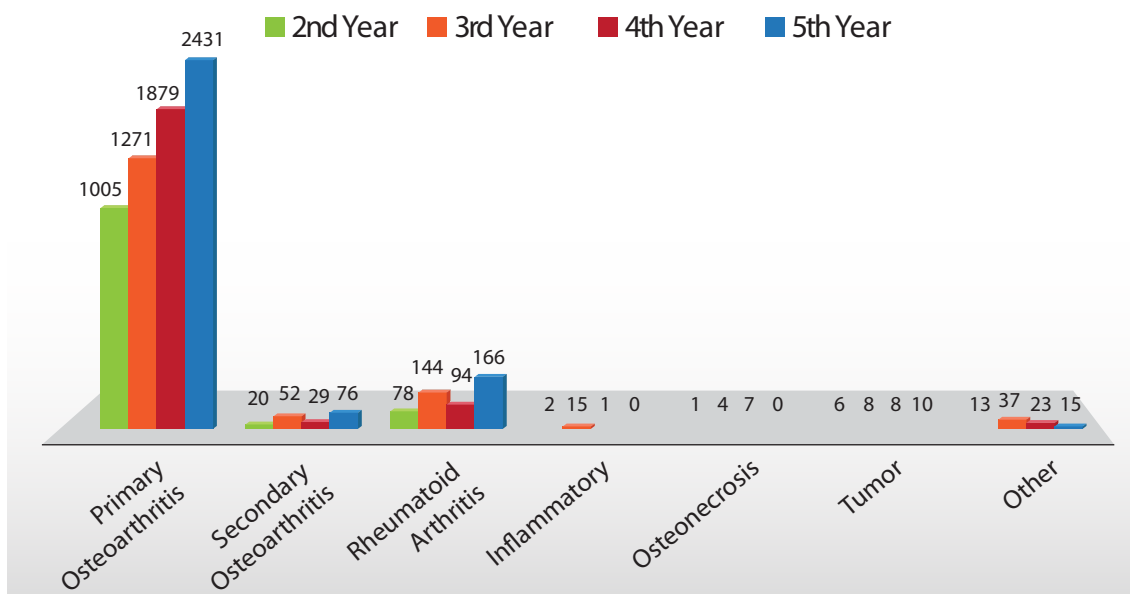
SECTION I

Primary Total Knee Arthroplasty

Geographical Distribution



Diagnosis

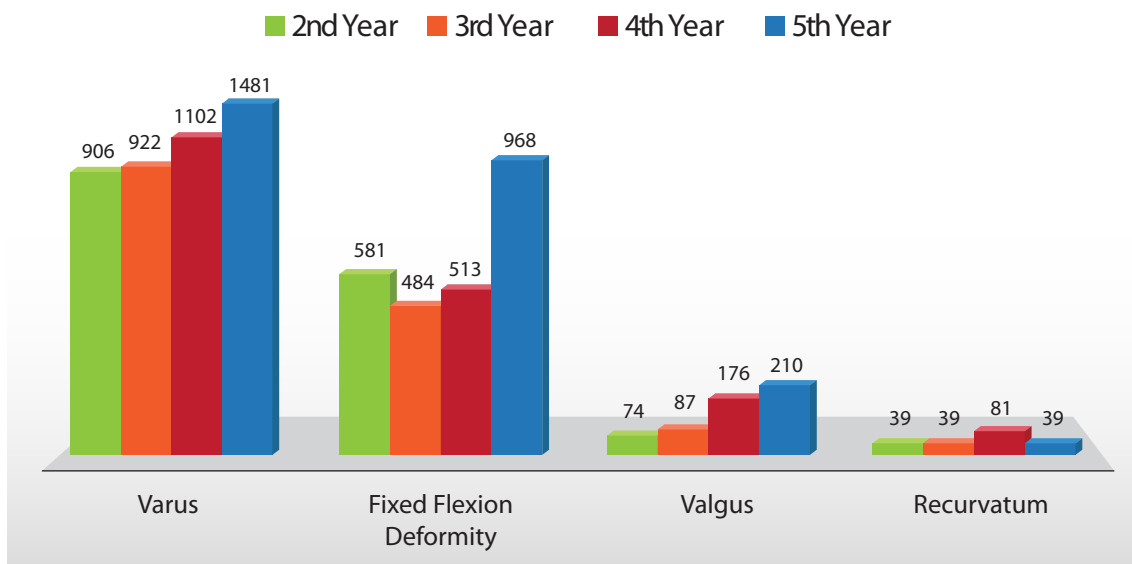




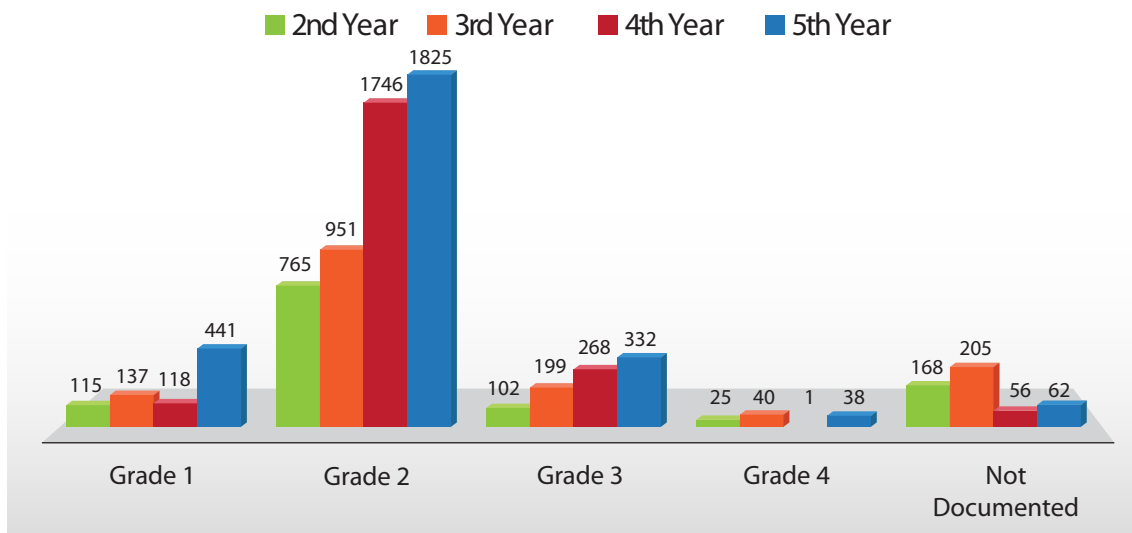
SECTION I

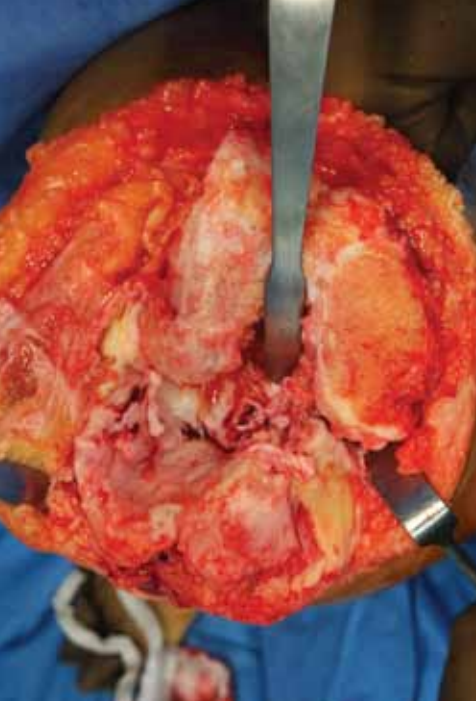
Primary Total Knee Arthroplasty

Pre-operative deformity



ASA Grading

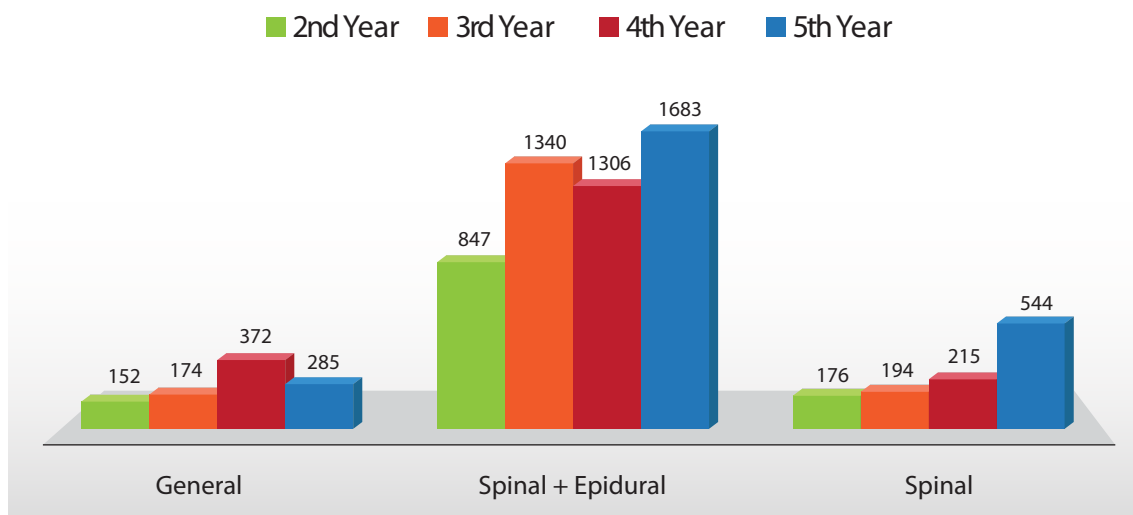




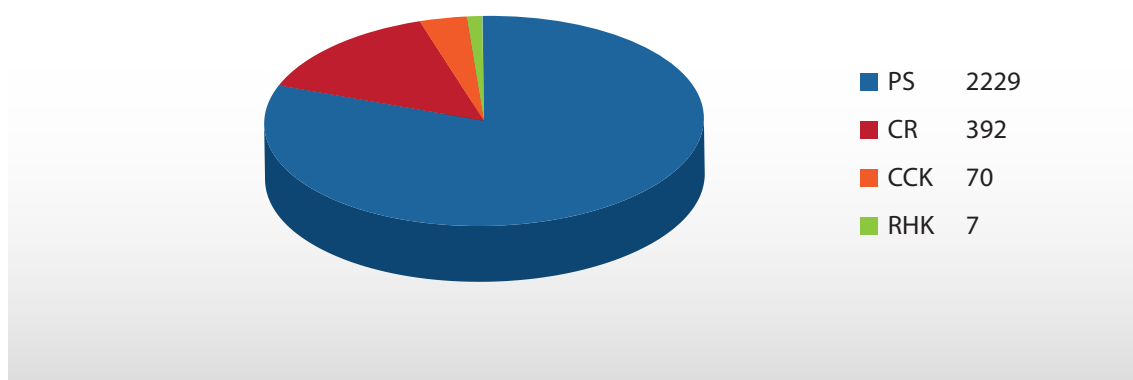
SECTION I

Primary Total Knee Arthroplasty

Anaesthesia



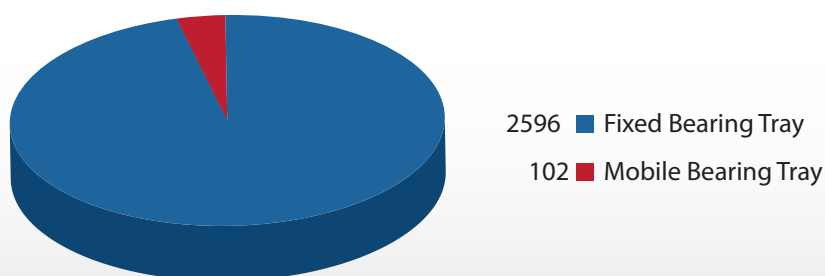
Implant Types according to level of constraint



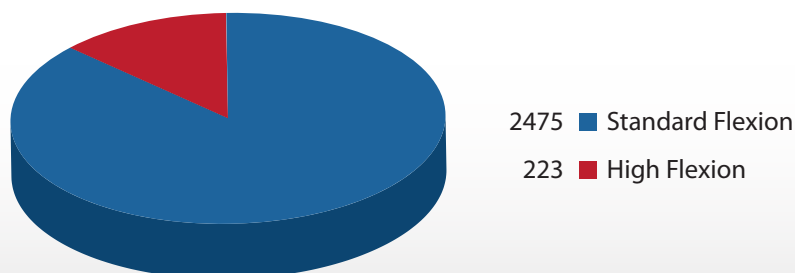
SECTION I

Primary Total Knee Arthroplasty

Implant Types according to Fixation of Tibial Insert



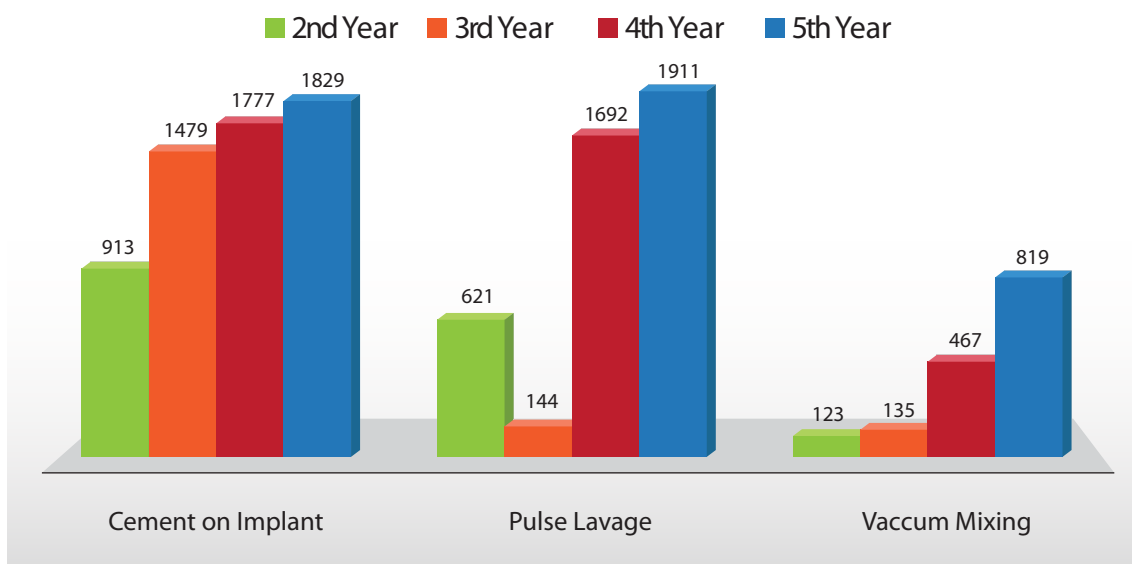
Implant Types according to built in flexion



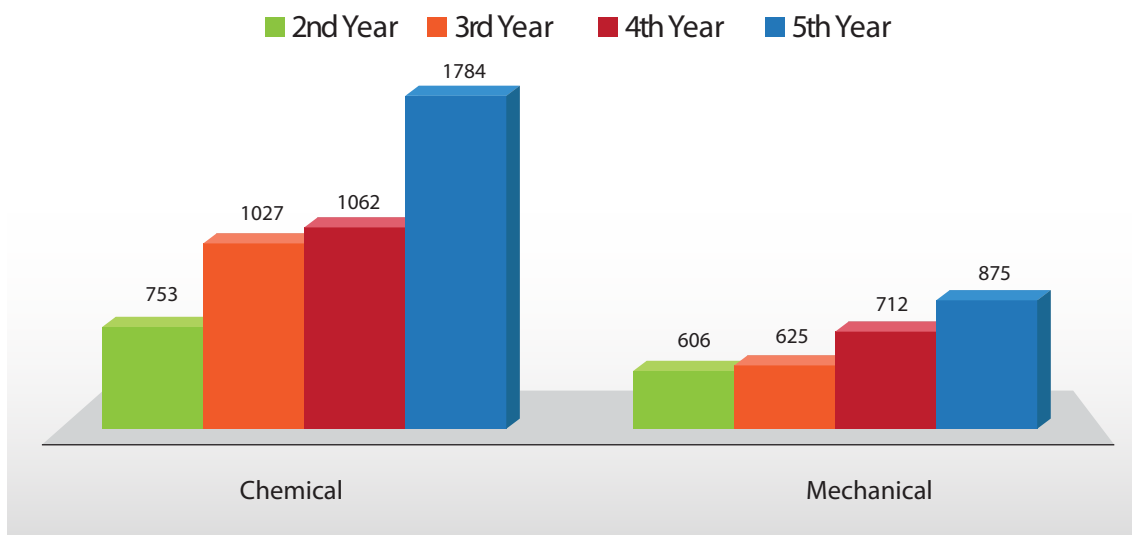
SECTION I

Primary Total Knee Arthroplasty

Cementing Techniques



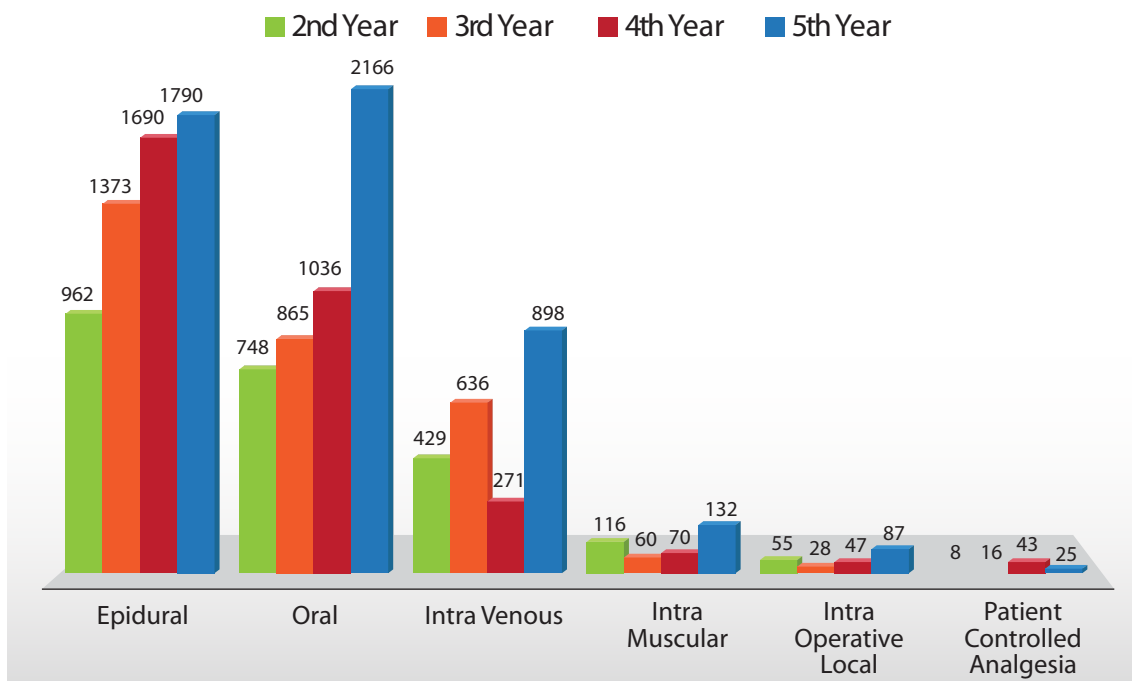
Thromboprophylaxis



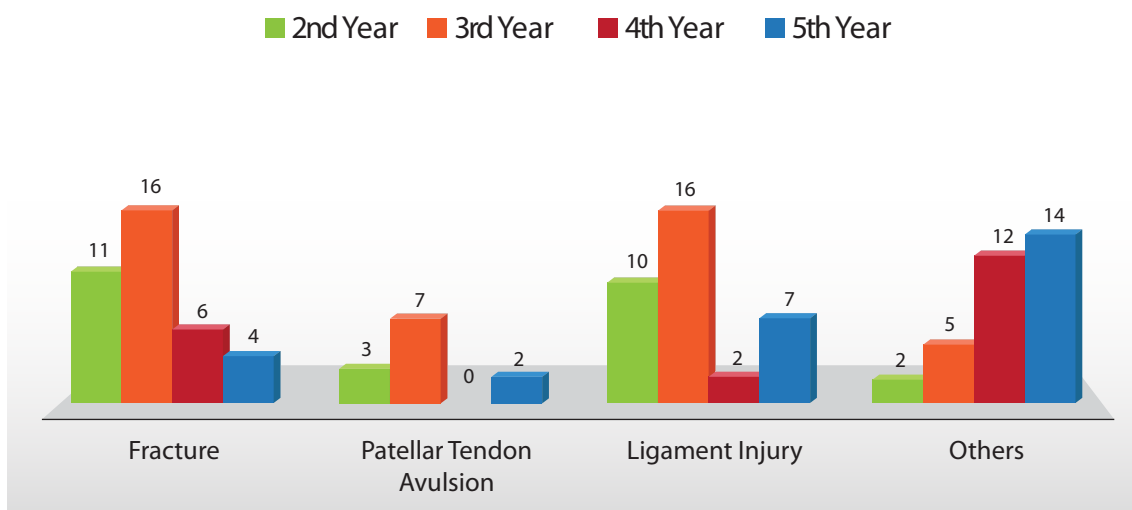
SECTION I

Primary Total Knee Arthroplasty

Post operative Analgesia



Adverse intraoperative events

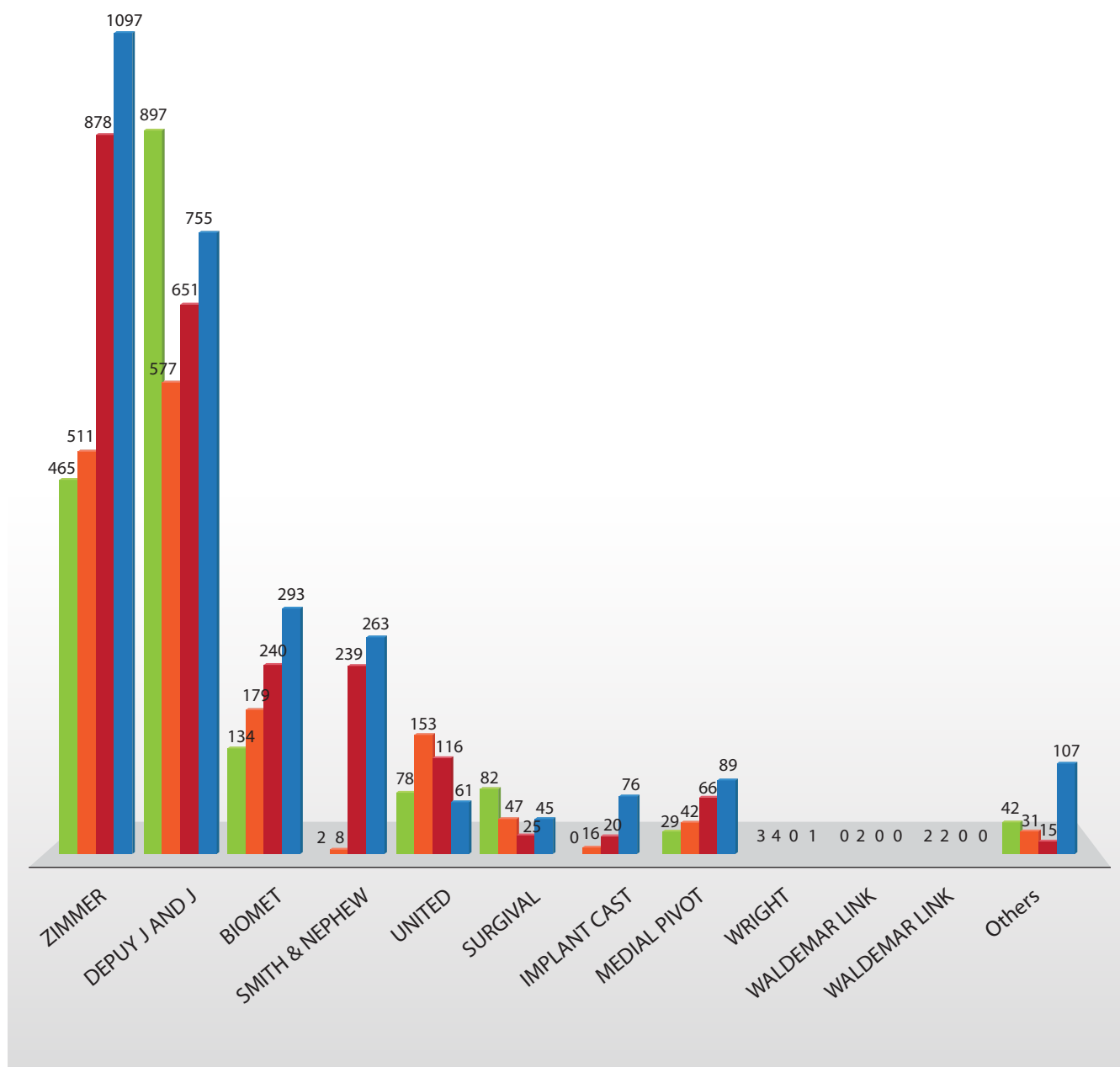


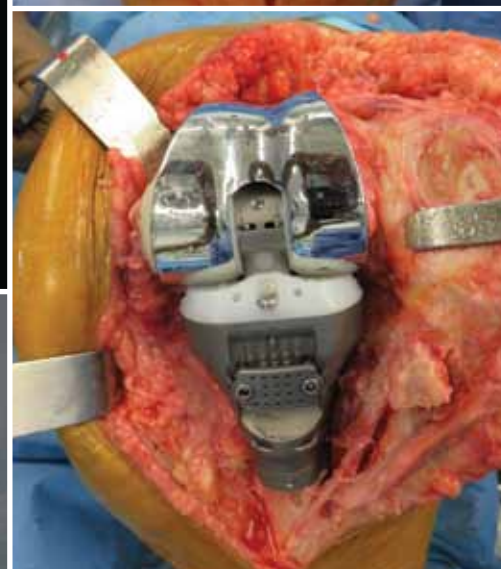
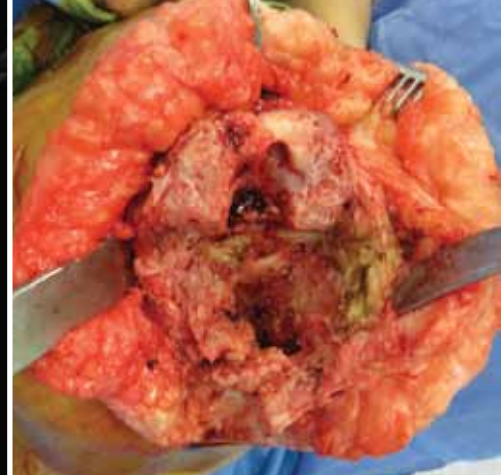
SECTION I

Primary Total Knee Arthroplasty

Implant Details

■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year

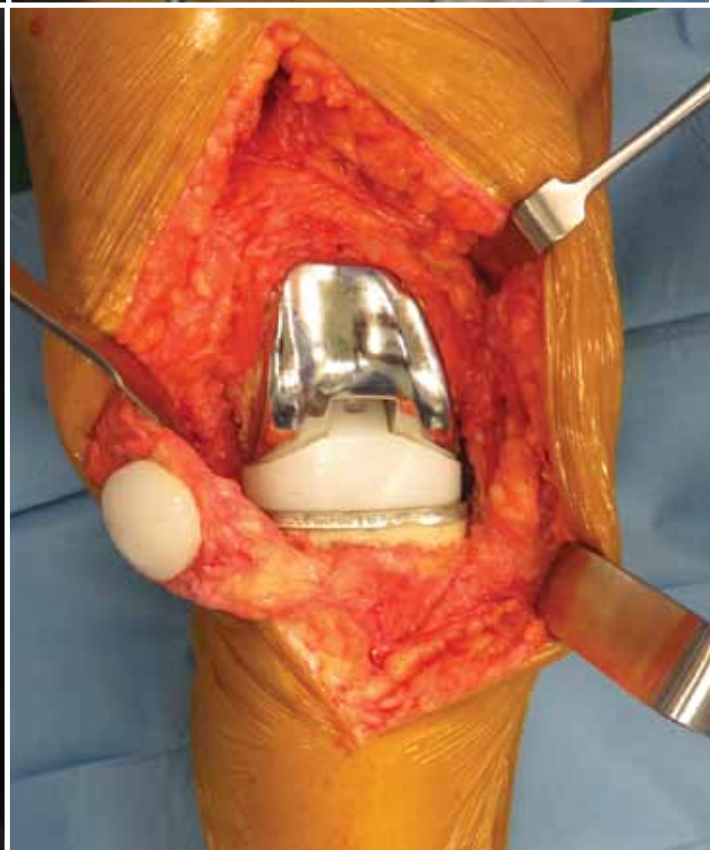






Revision
Total Knee Arthroplasty
SECTION II

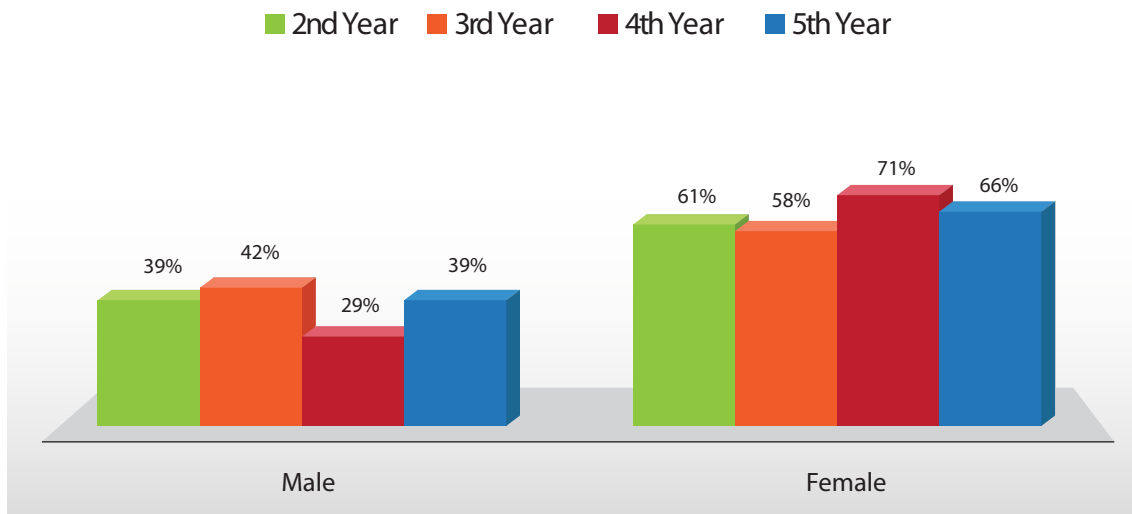




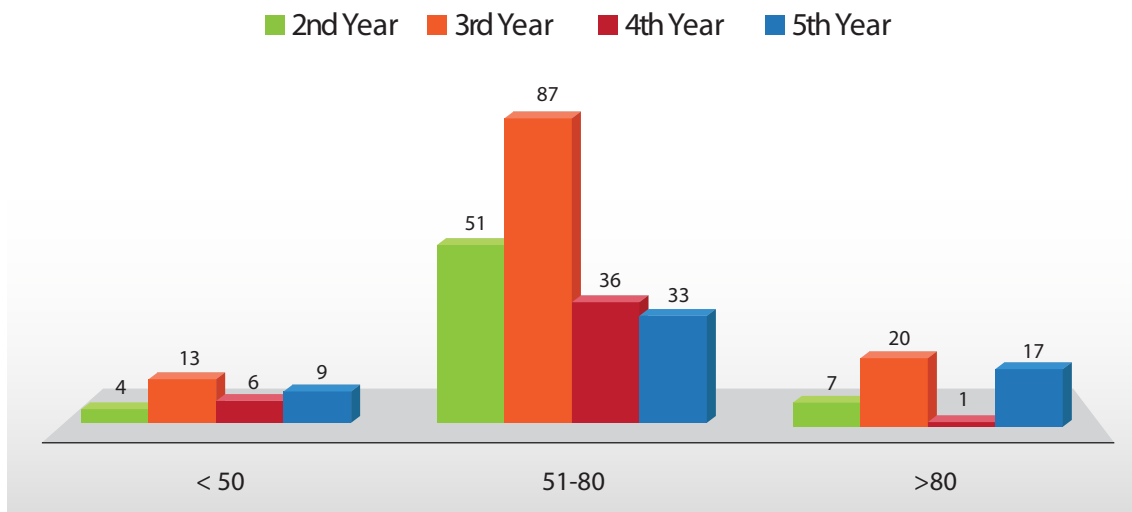
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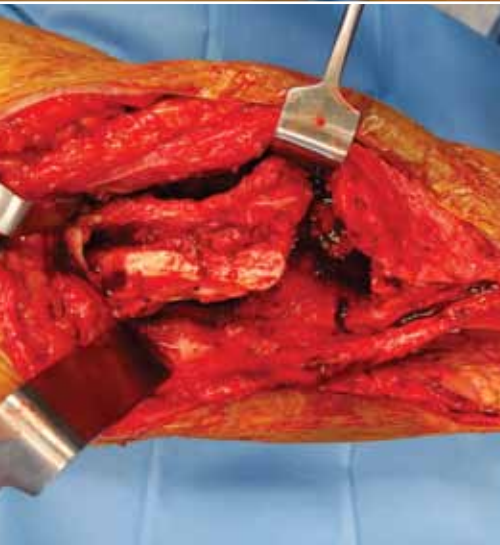
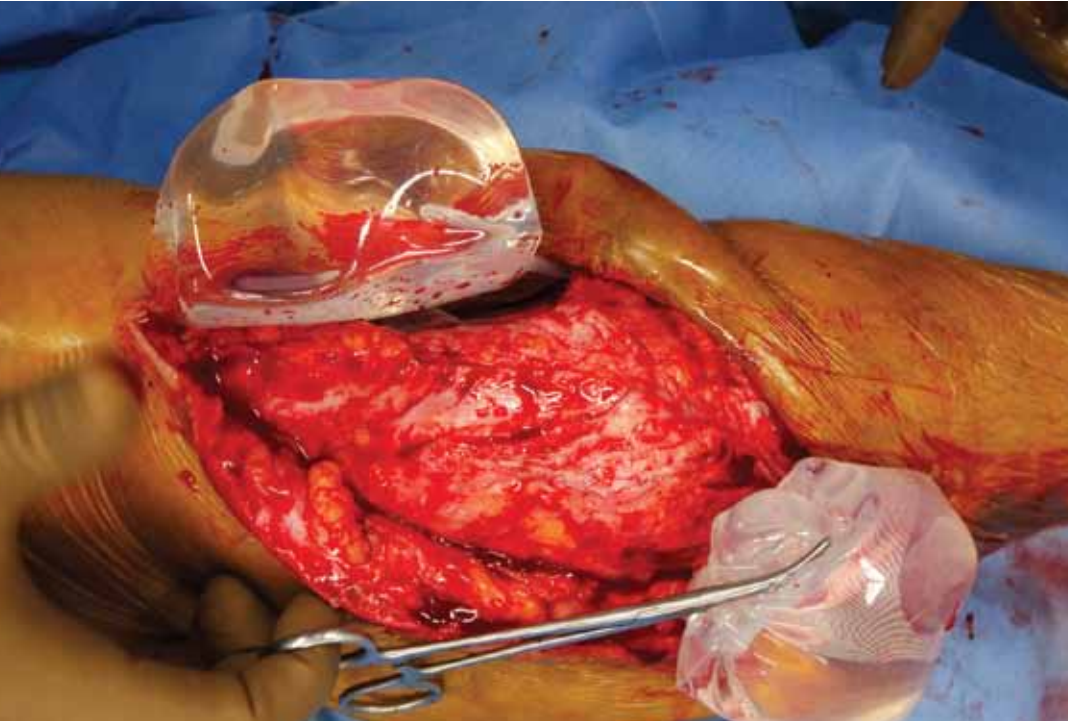
Revision Total Knee Arthroplasty

Gender Distribution



Age Category

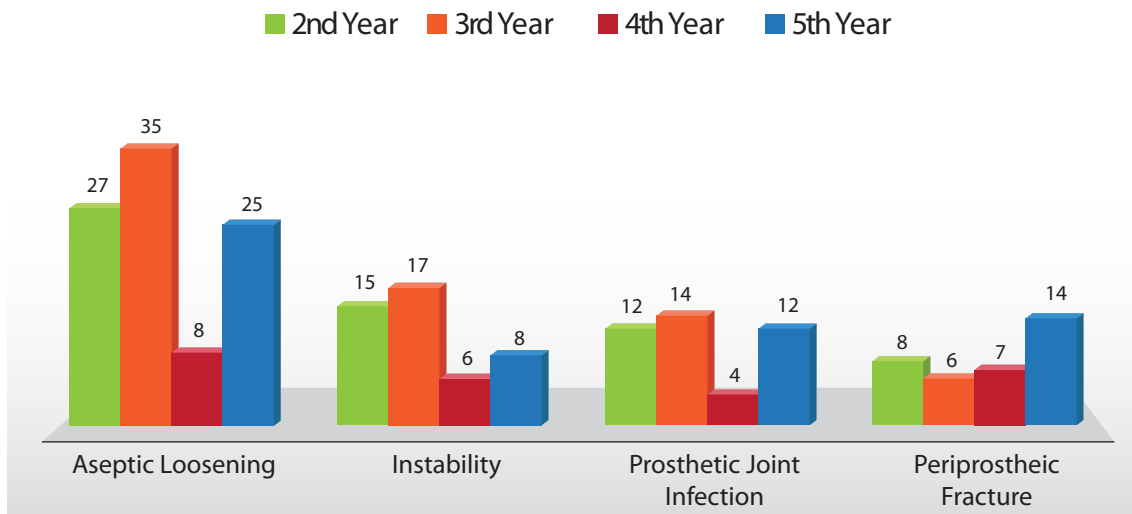




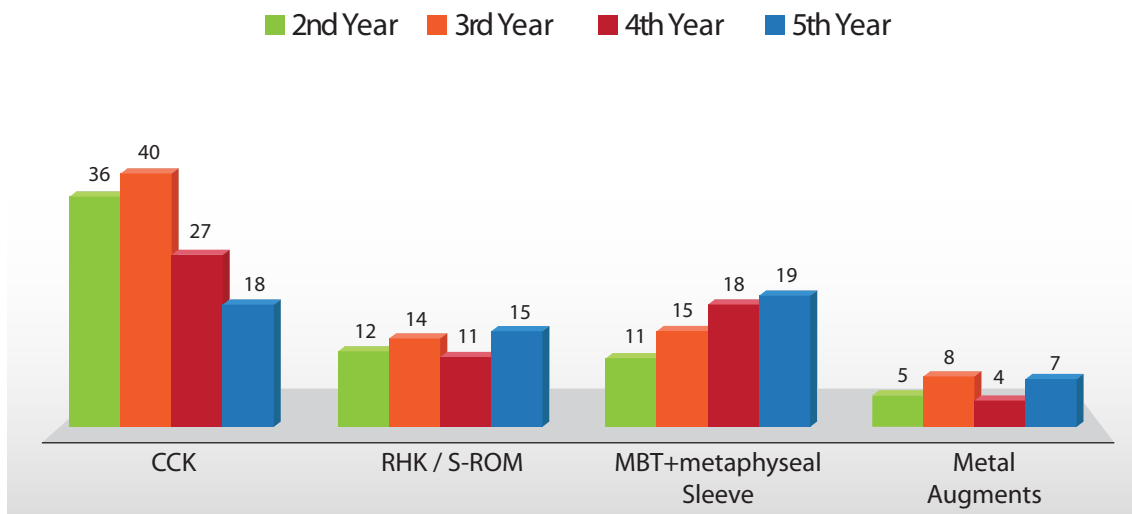
SECTION II

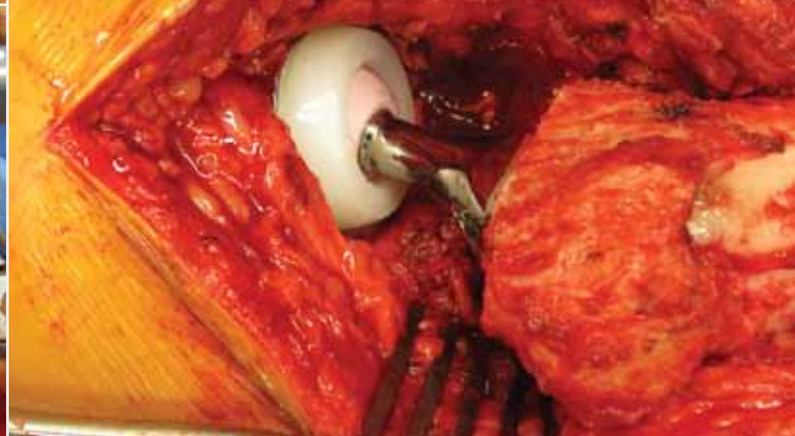
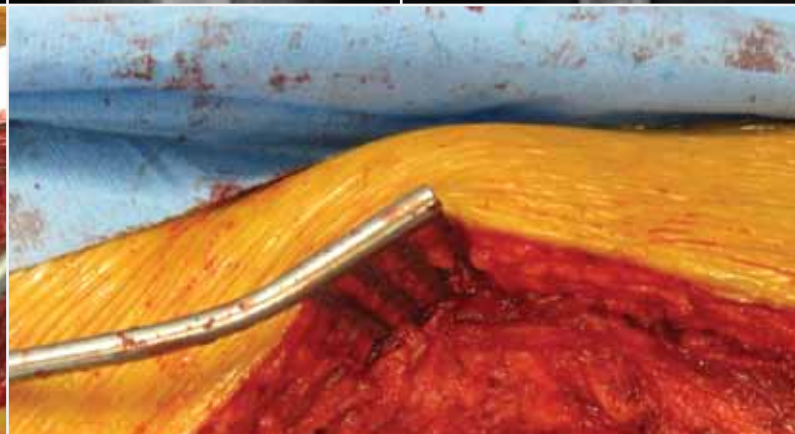
Revision Total Knee Arthroplasty

Diagnosis



Implant Detail







Primary
Total Hip Arthroplasty
SECTION III

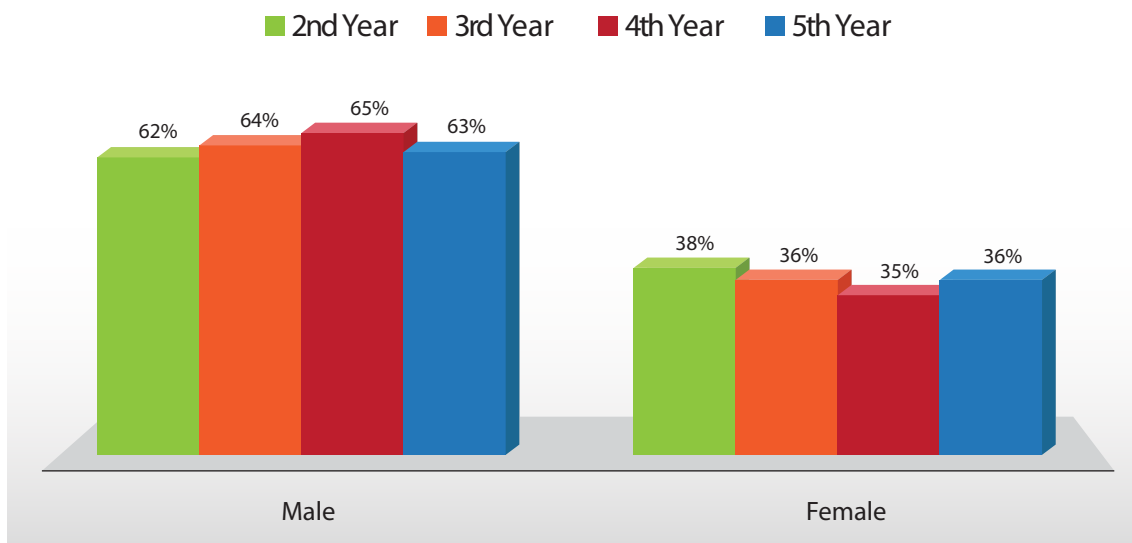




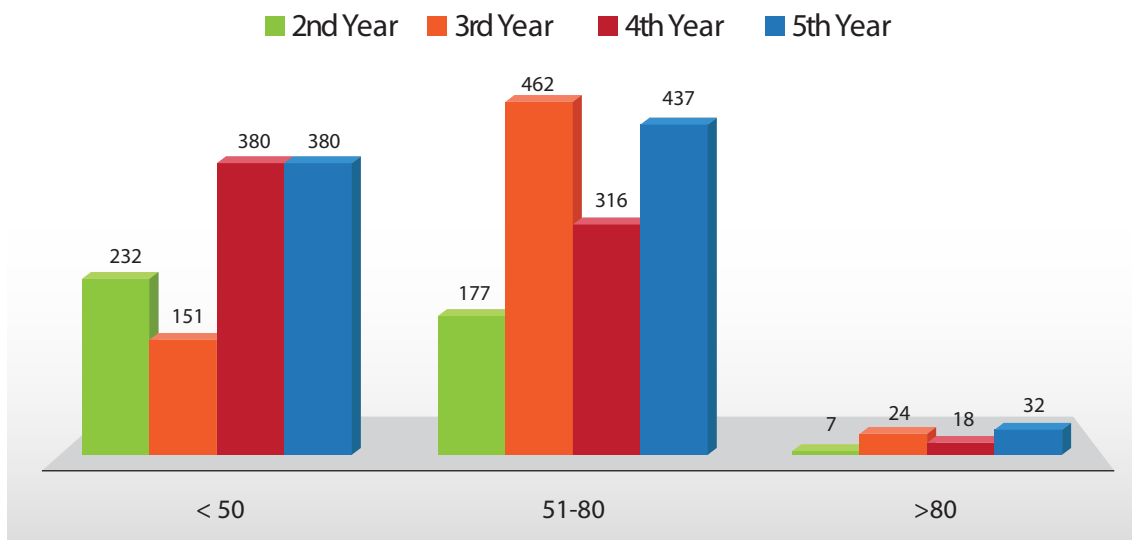
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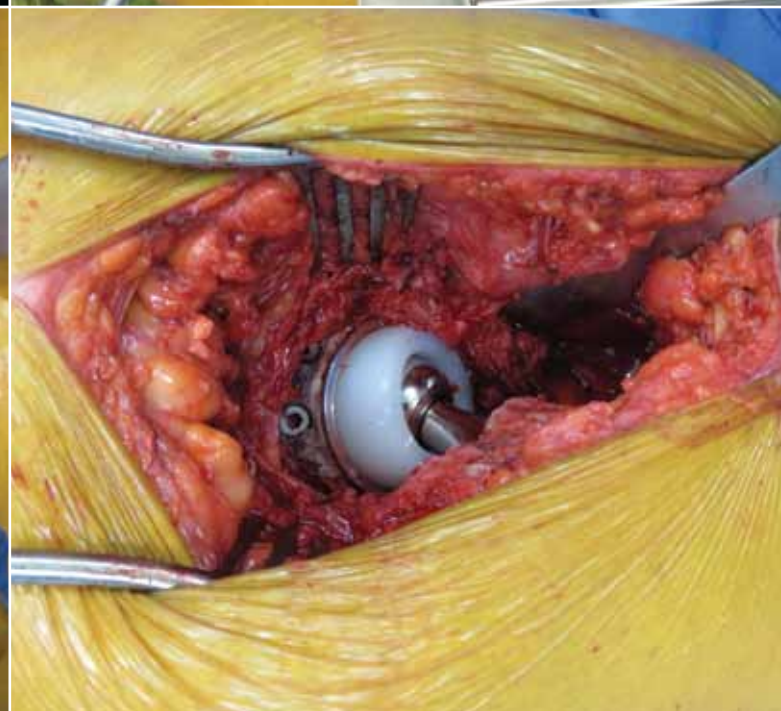
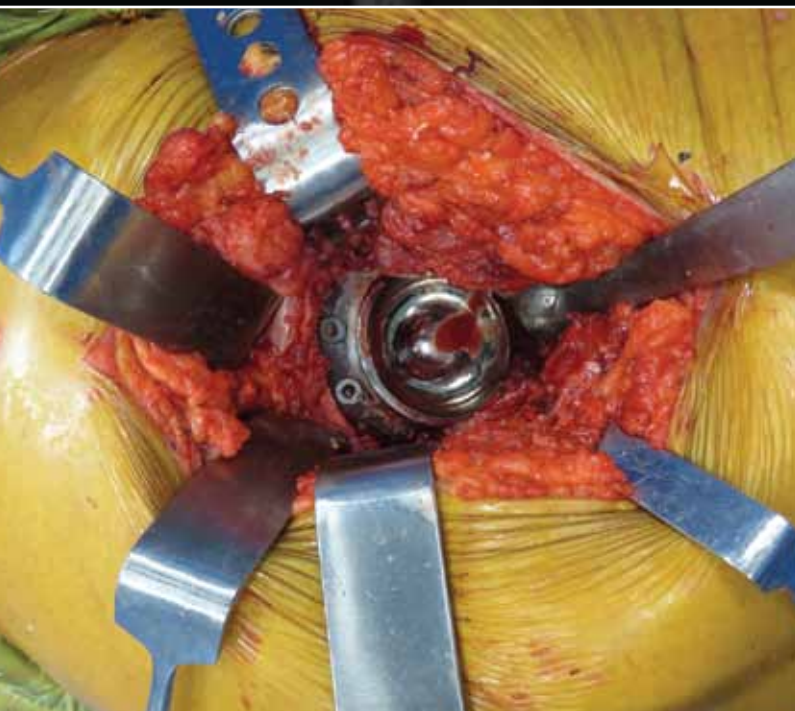
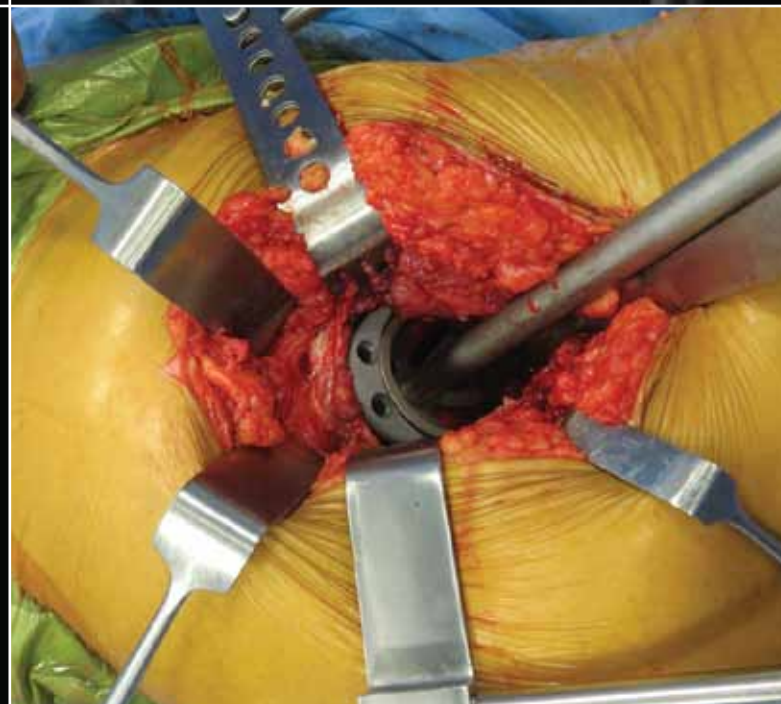
Primary Total Hip Arthroplasty

Gender Distribution



Age Category



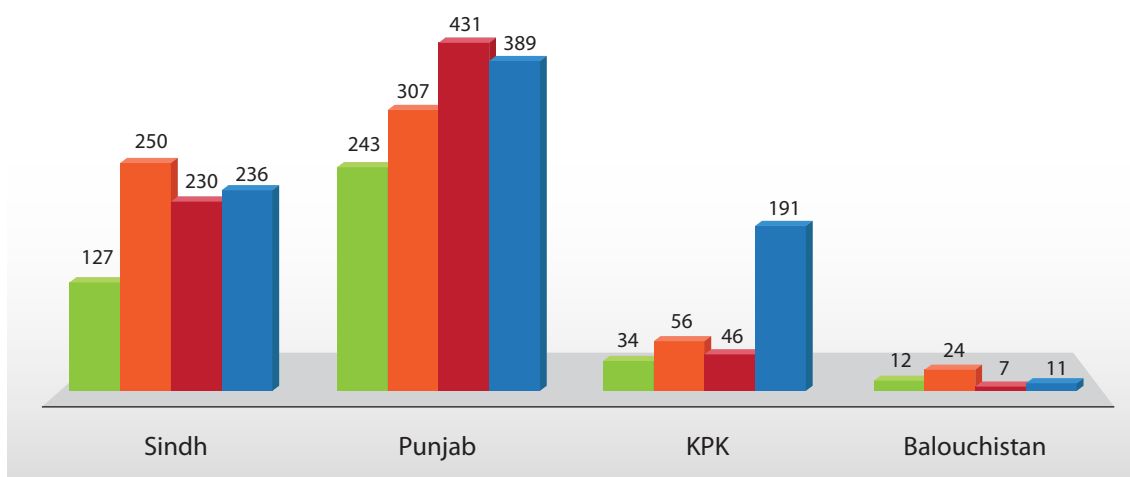


SECTION III

Primary Total Hip Arthroplasty

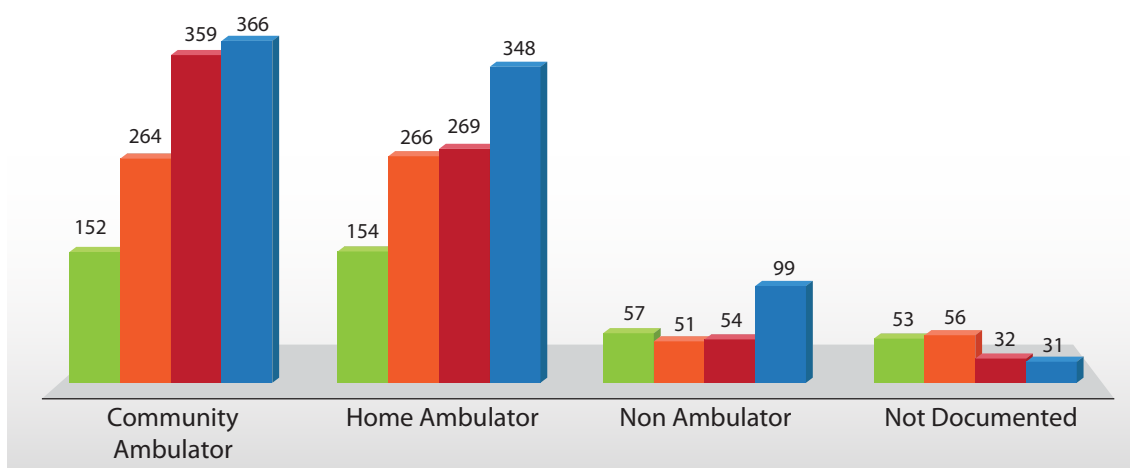
Geographical Distribution

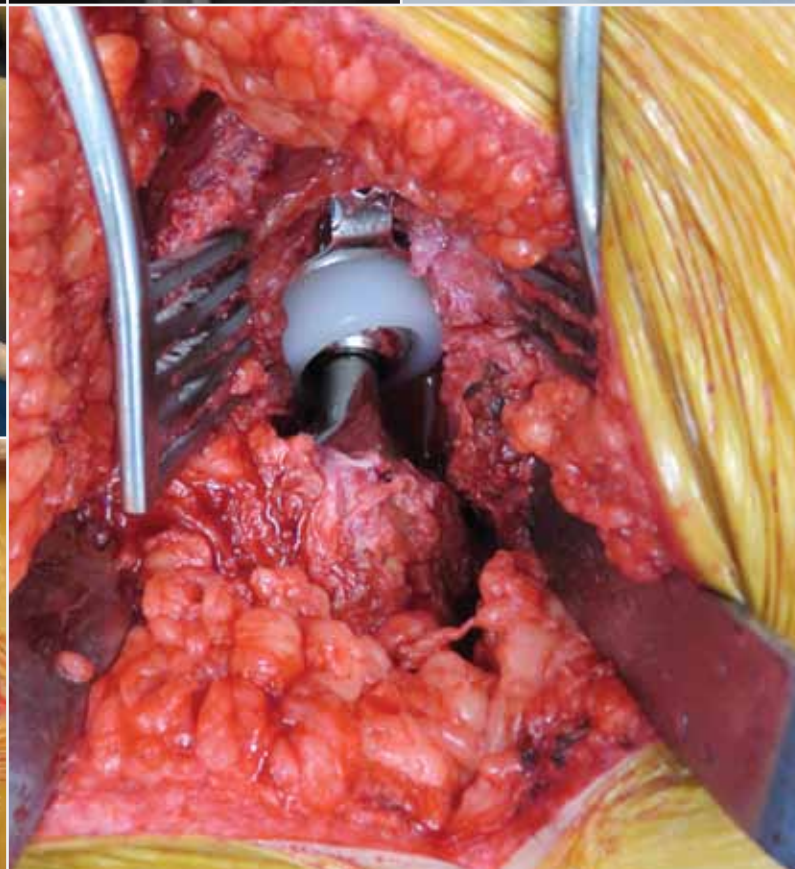
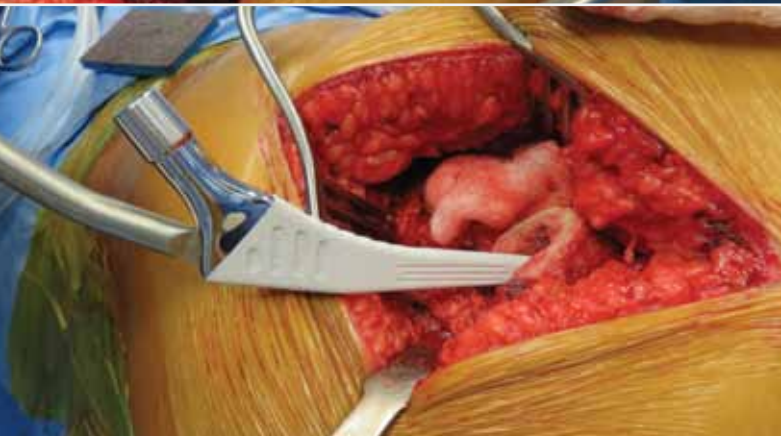
■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



Pre Operative Ambulatory Status

■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year

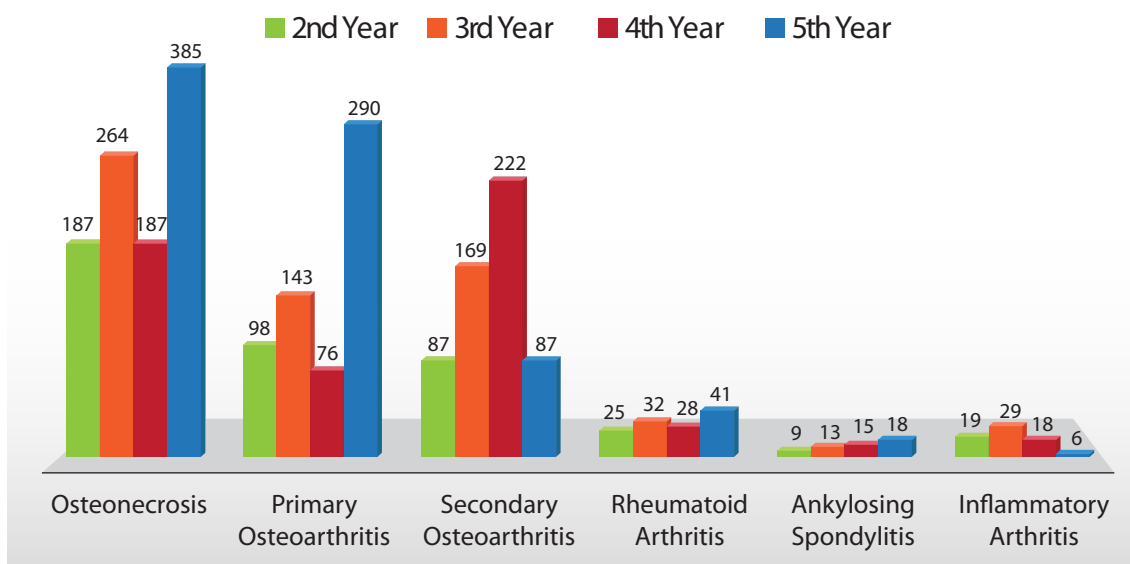




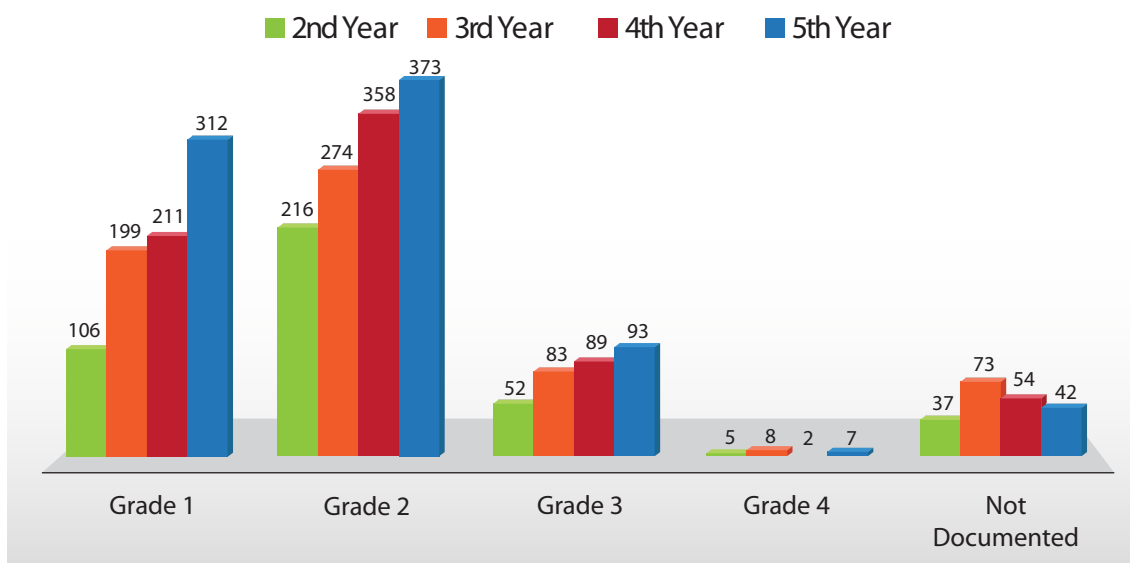
SECTION III

Primary Total Hip Arthroplasty

Diagnosis



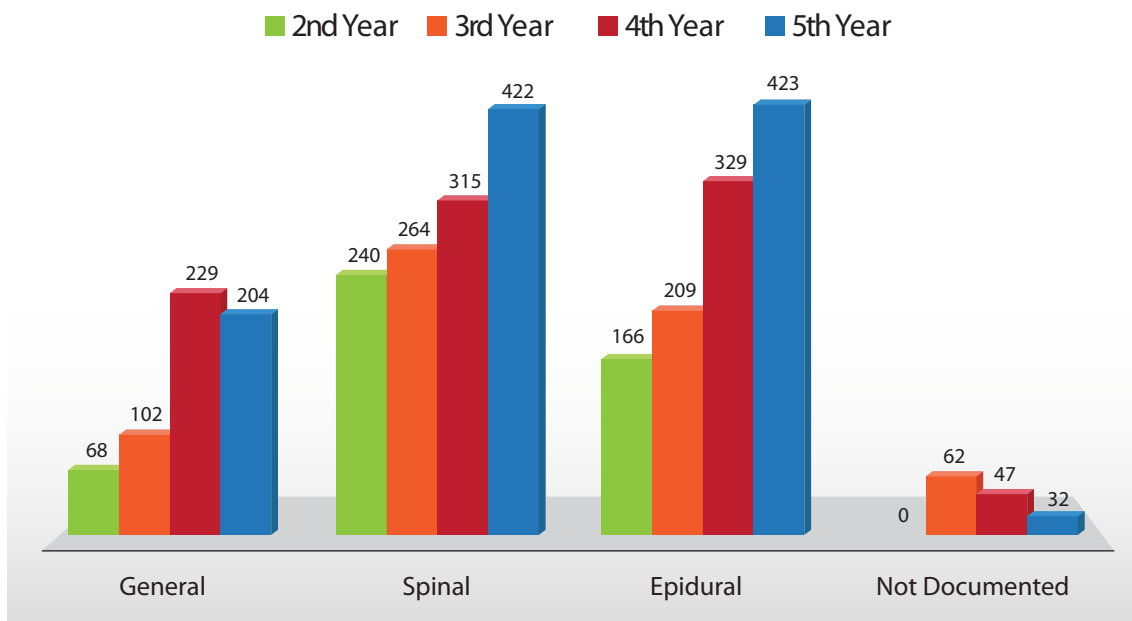
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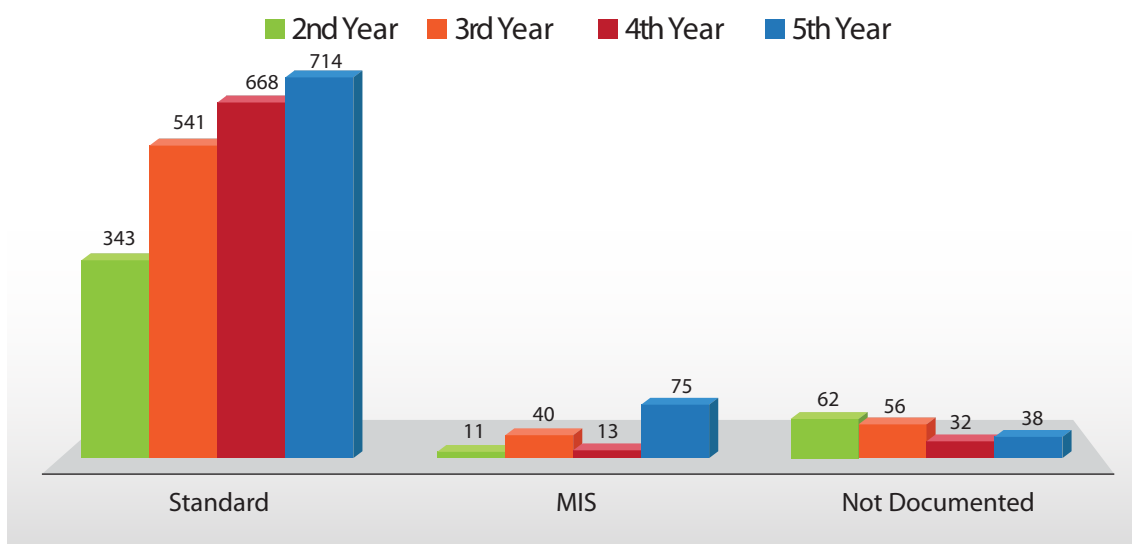
SECTION III

Primary Total Hip Arthroplasty

Types of Anesthesia



Surgical Incisions

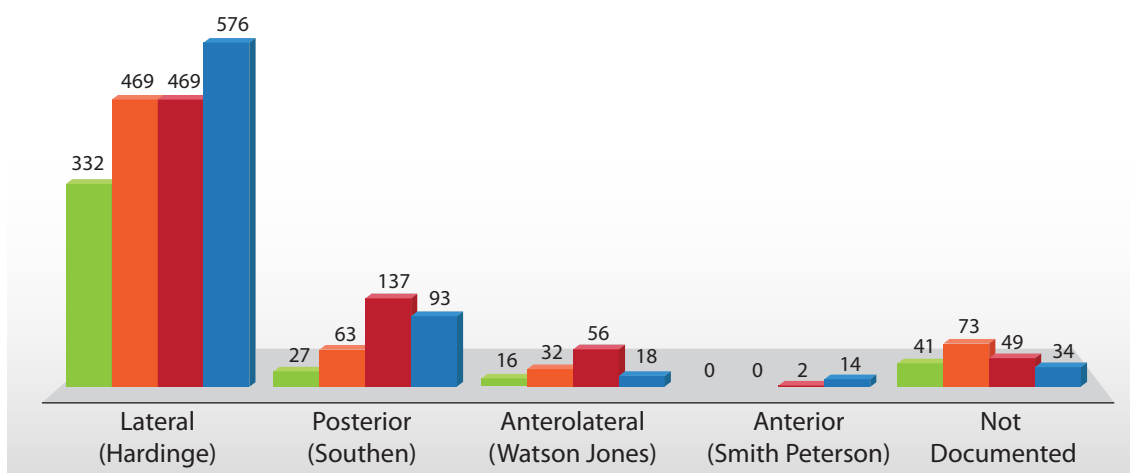


SECTION III

Primary Total Hip Arthroplasty

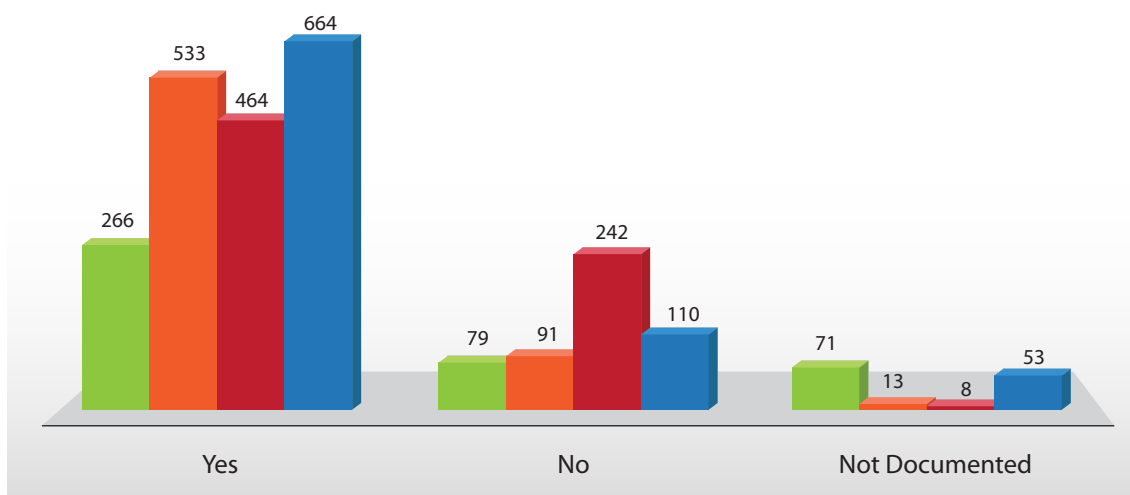
Surgical Approaches

■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



Drain Used

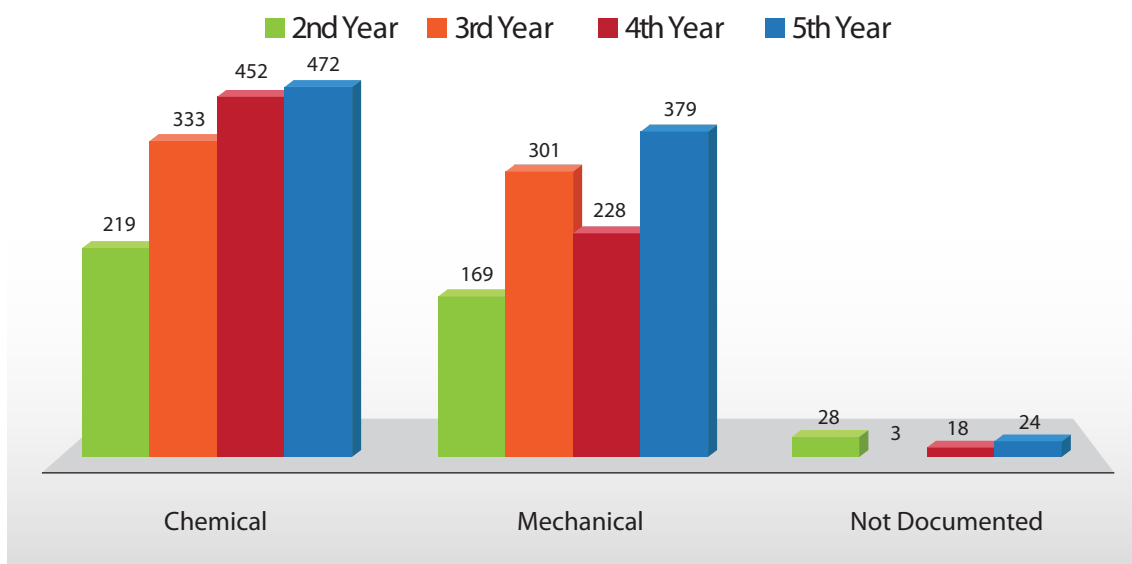
■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



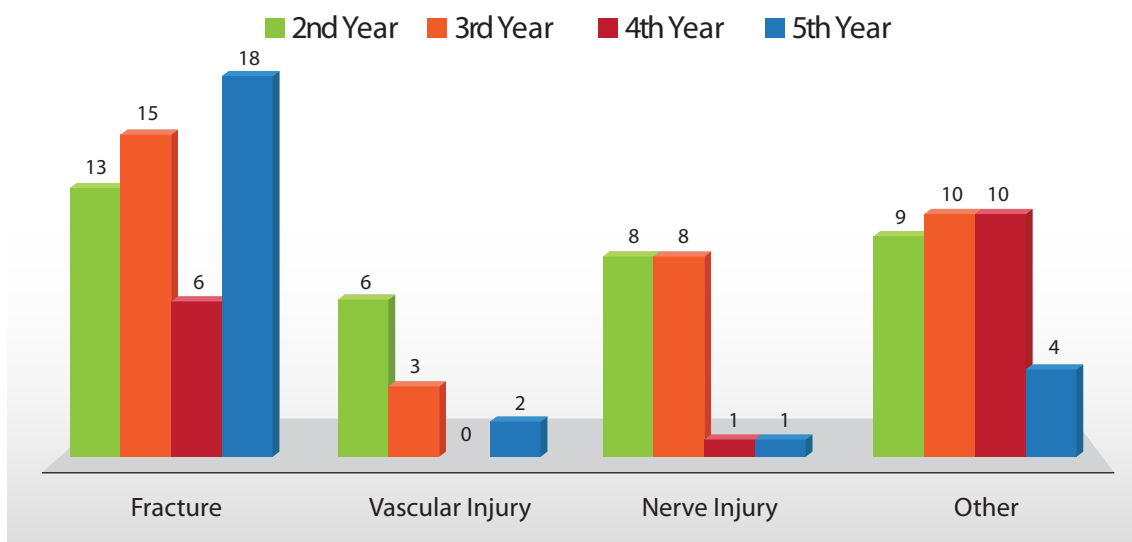
SECTION III

Primary Total Hip Arthroplasty

Thromboprophylaxis



Adverse Intraoperative Events

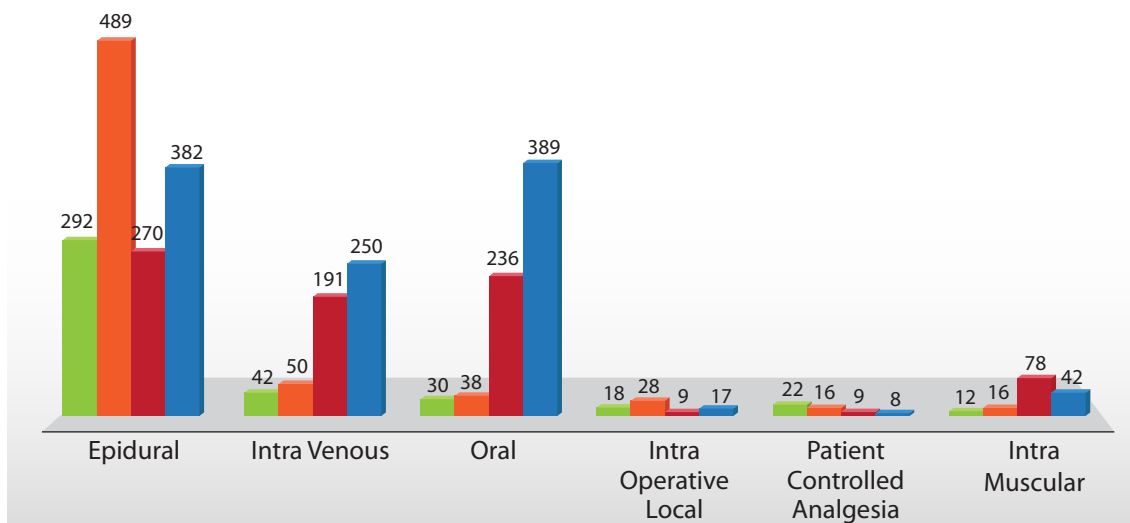


SECTION III

Primary Total Hip Arthroplasty

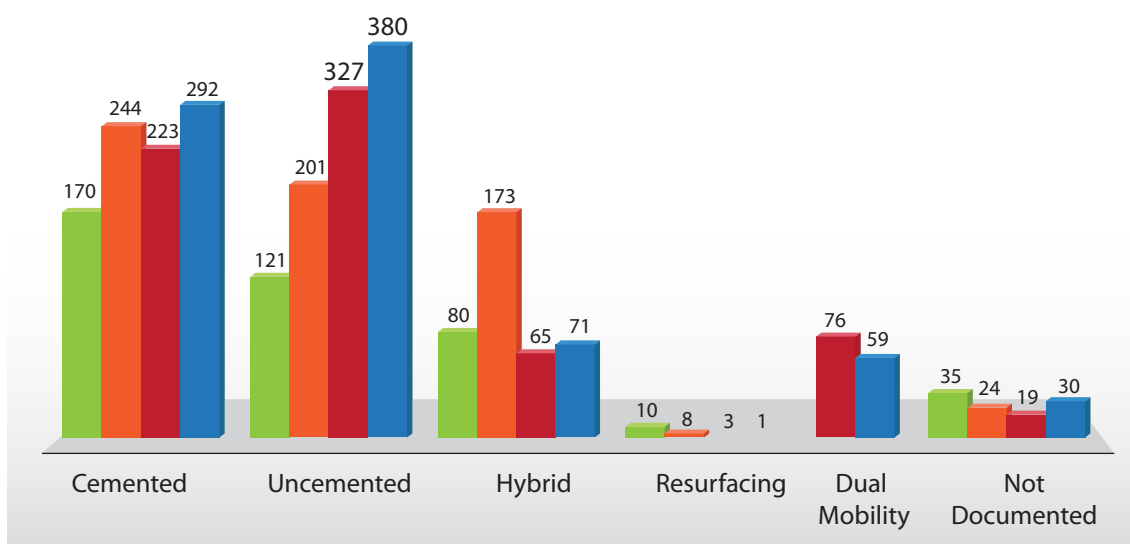
Post operative Analgesia

■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



Implant Details

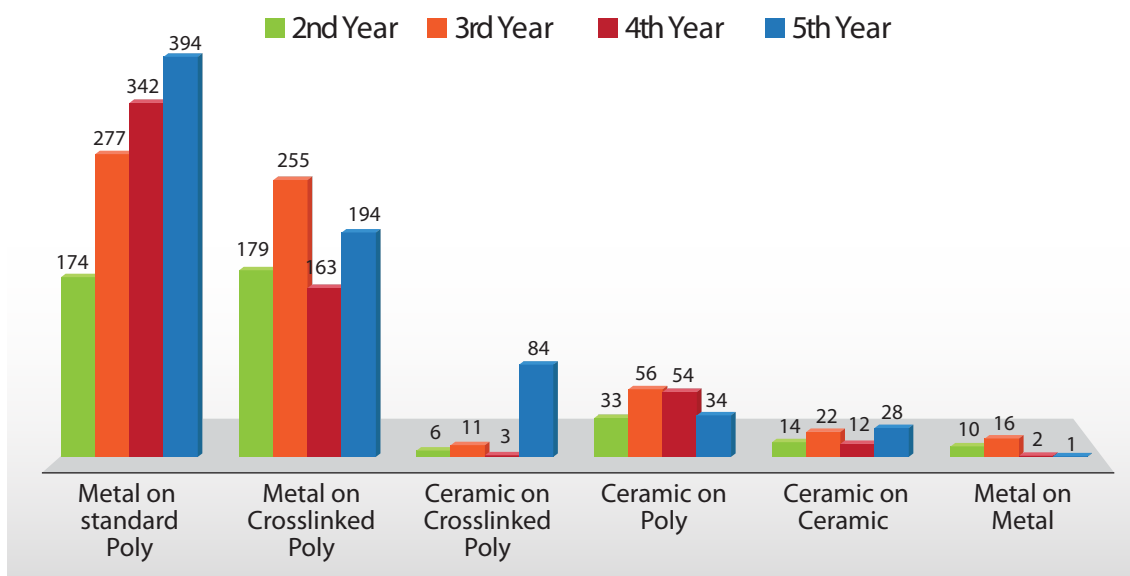
■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



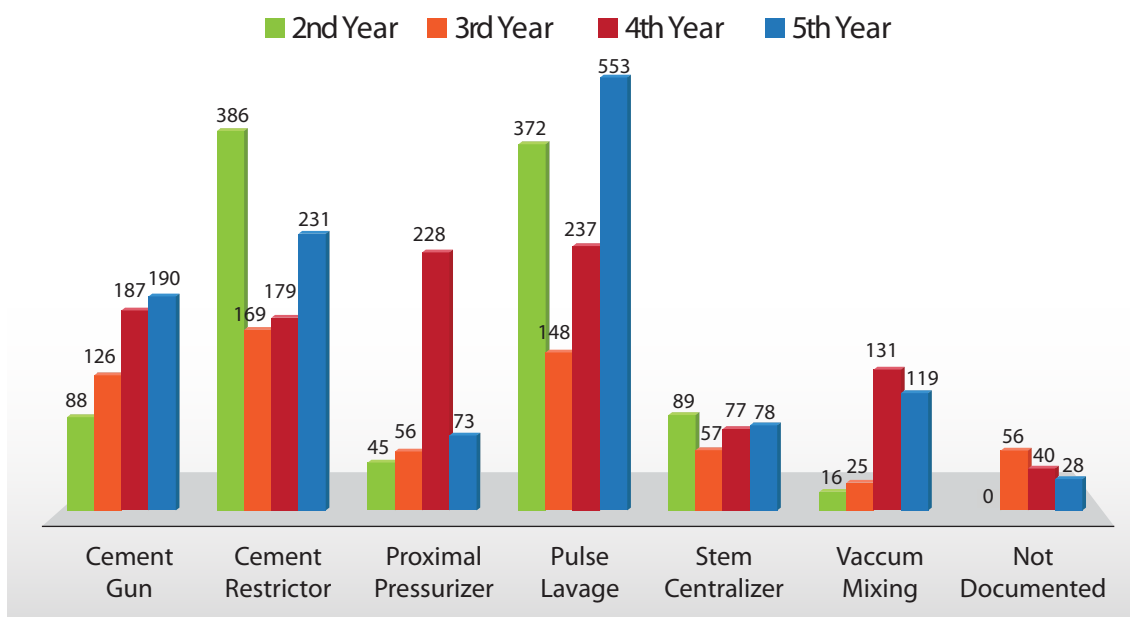
SECTION III

Primary Total Hip Arthroplasty

Bearing Surfaces



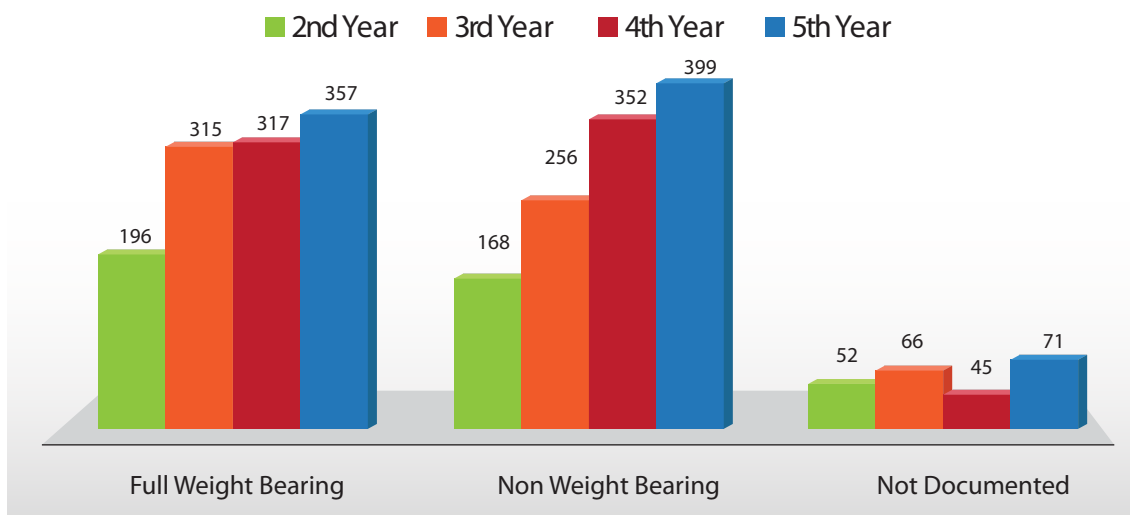
Cementing Technique



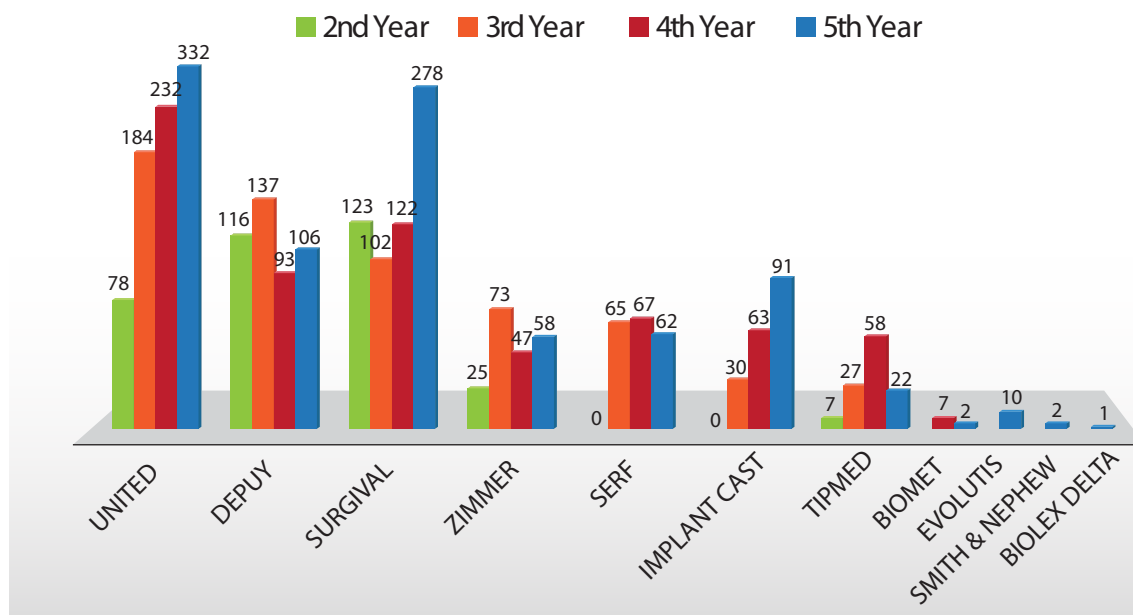
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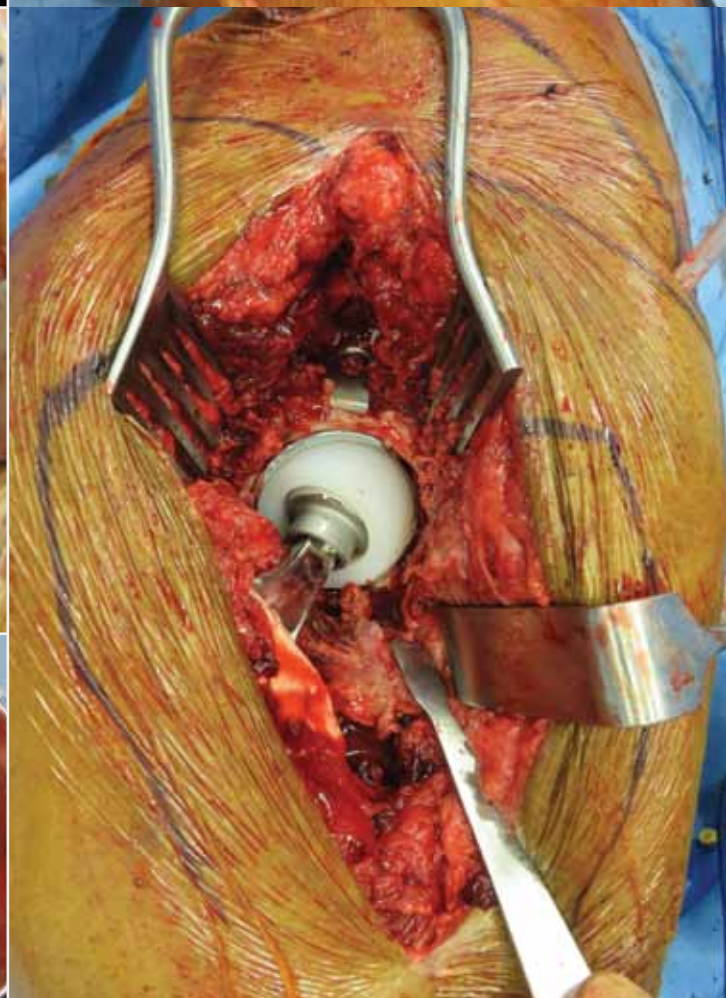
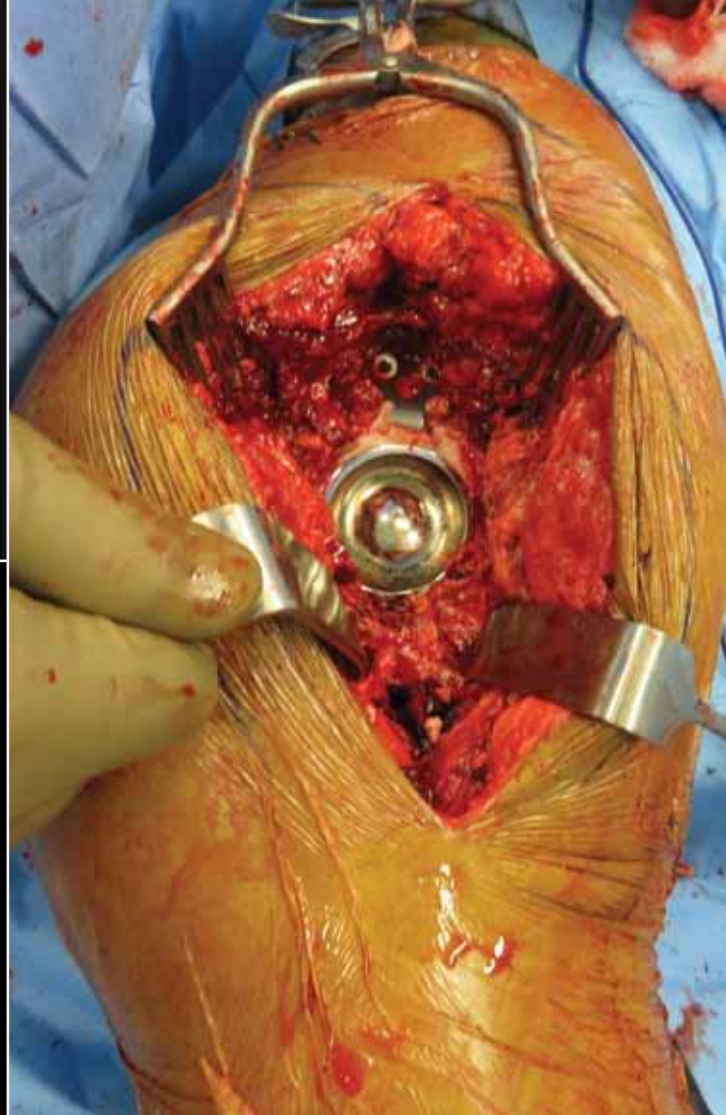
Primary Total Hip Arthroplasty

Post Op Weight Bearing



Age Category

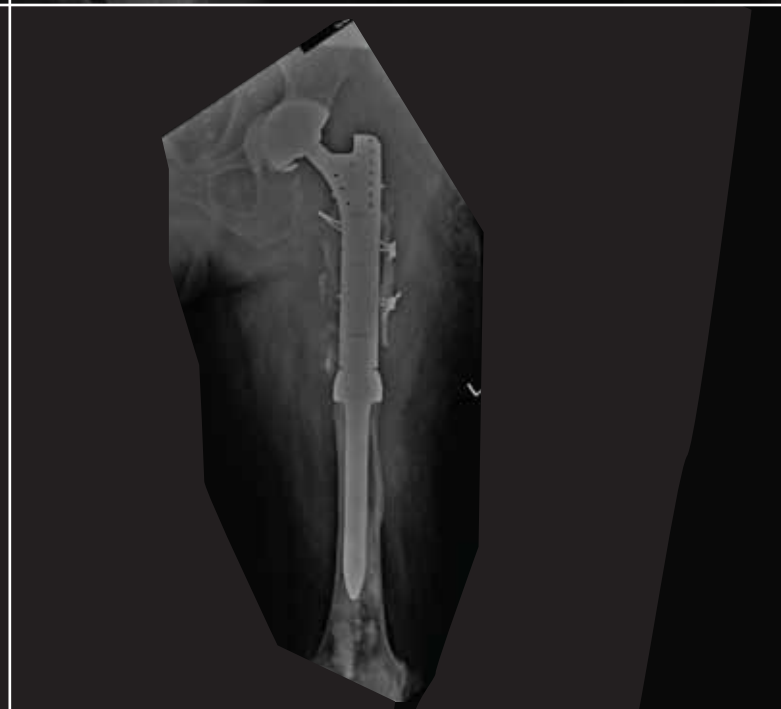






Revision
Total Hip Arthroplasty
SECTION IV

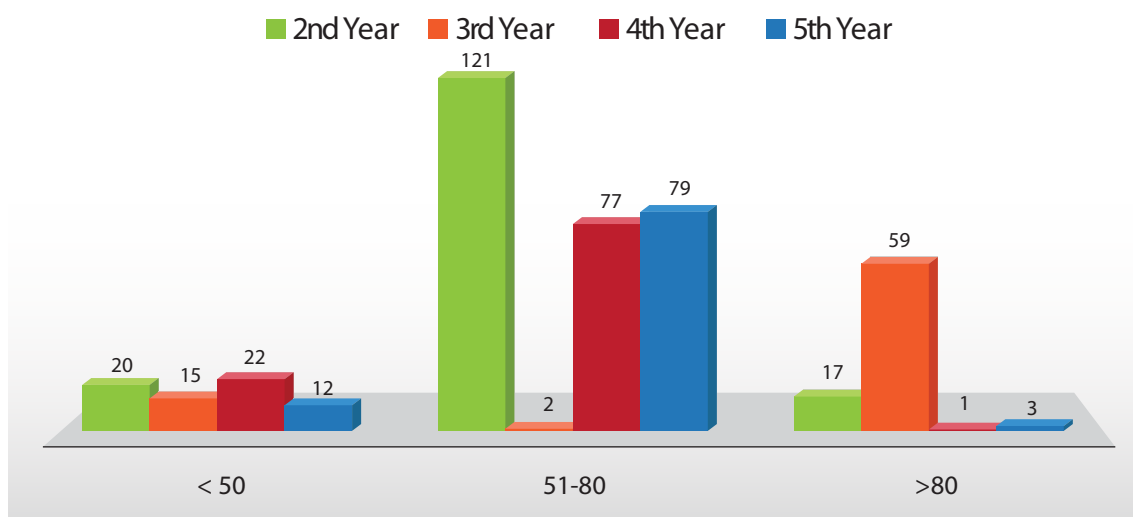




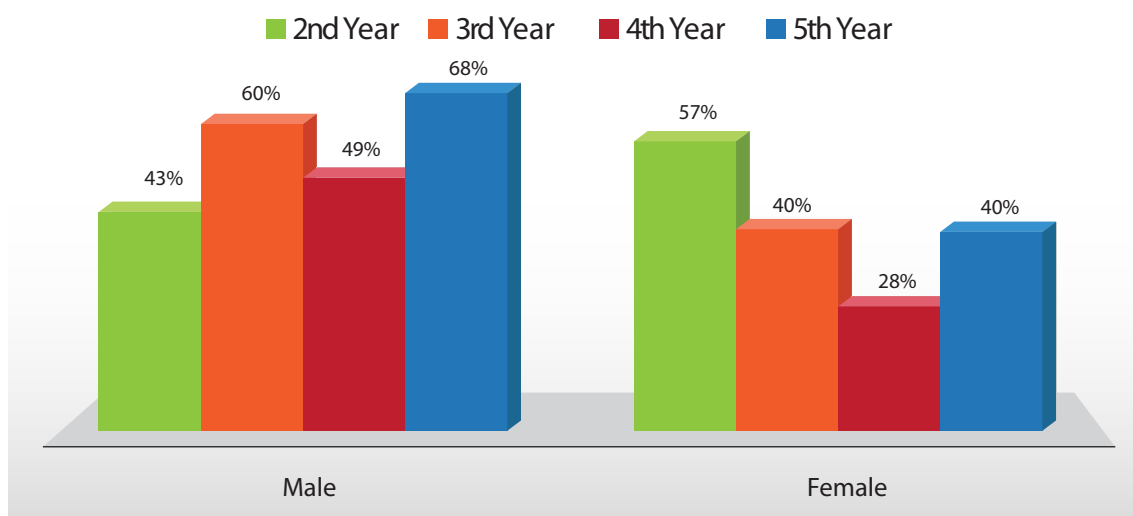
SECTION IV

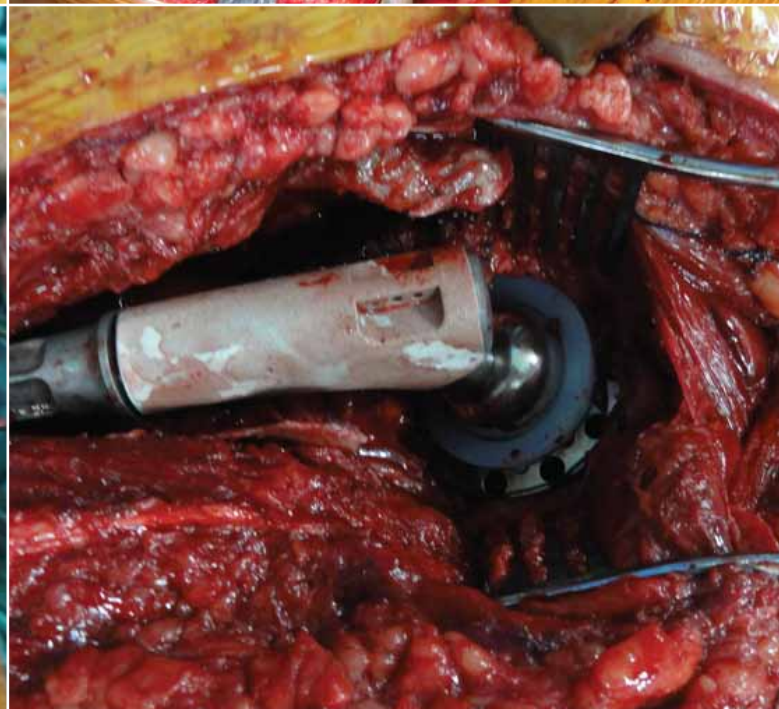
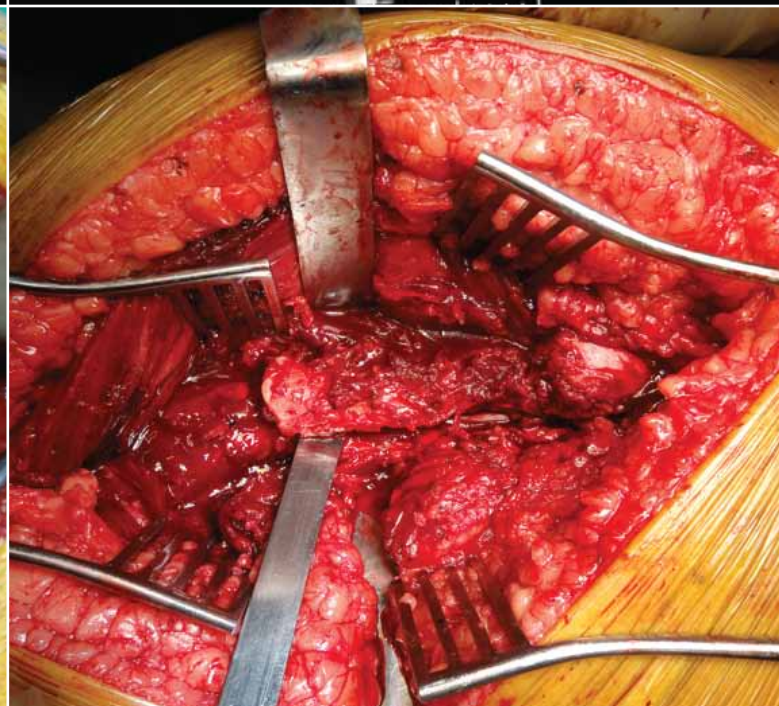
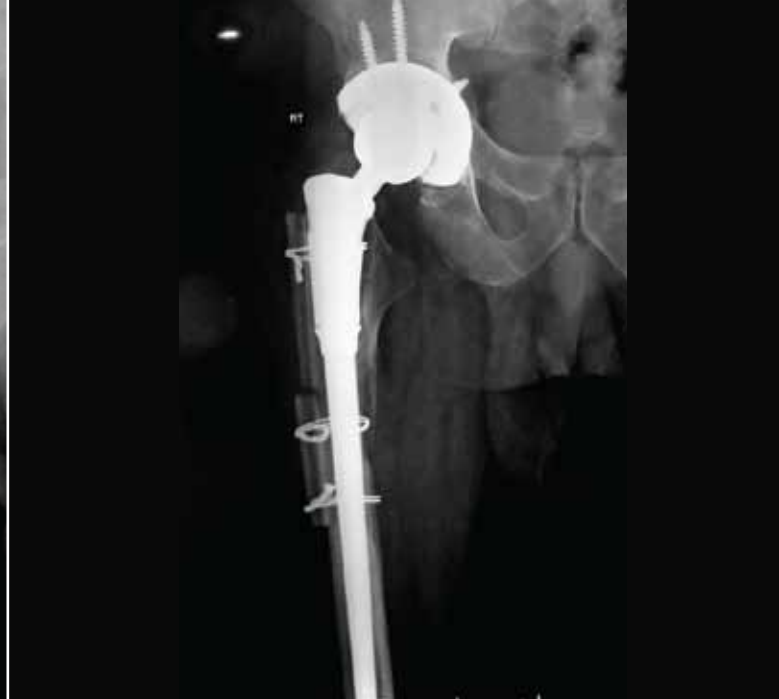
Revision Total Hip Arthroplasty

Age Category



Gender Distribution



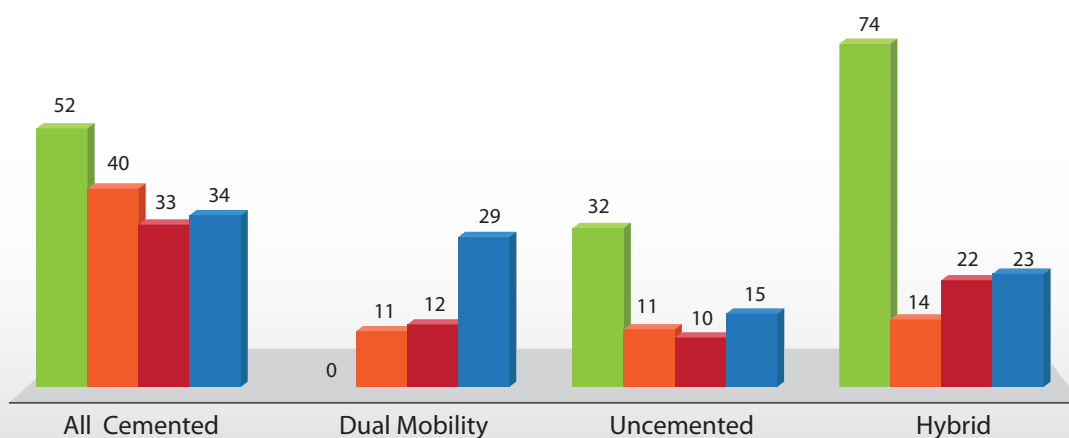


SECTION IV

Revision Total Hip Arthroplasty

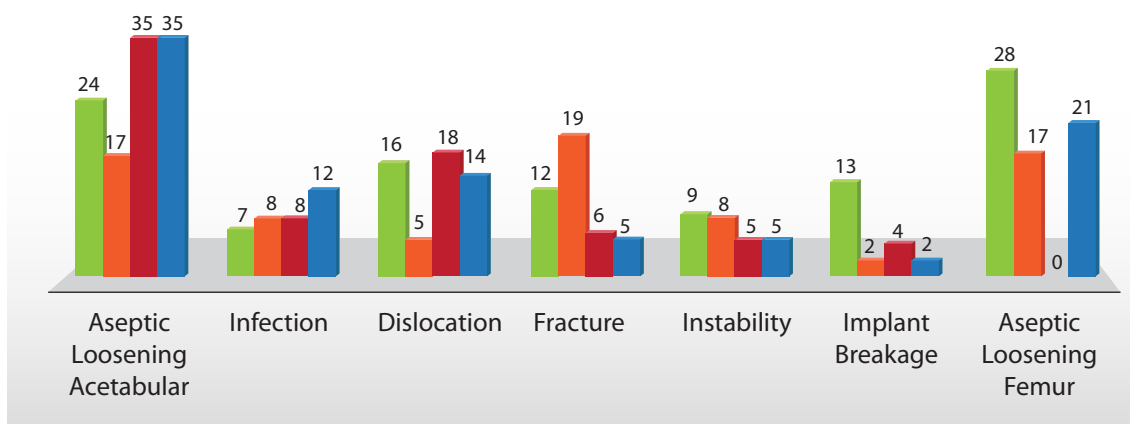
Implant Detail

■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



Diagnosis

■ 2nd Year ■ 3rd Year ■ 4th Year ■ 5th Year



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