

Intraoperative process in operating theatre throughout
process of hip replacement surgery.

Orientation guide material for care professionals working in
operating and anesthesia unit of LPKS, Kemi.

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Tekonivelleikkaus, tunnettu TEP:nä, on operatiivinen toimenpide, jolla hoidetaan nivelrikosta kärsivää lonkan niveltä ja sen ympäröivä aluetta. TEP on yleinen leikkaus Suomessa, jolla pyritään parantamaan potilaan arkea.

Projektin tarkoitus oli muodostaa kirjallinen opastus leikkaus – ja anestesia osaston henkilökunnalle ja muille prosessiin osallistuville asiantuntijoille, jossa on kuvattuna leikkaushoitajien intraoperatiivinen toimintakuva primaarisen elektiivisen lonkan tekonivelleikkauksen aikana. Projektissa käsitellään lonkan tekonivelleikkauksen toimenpiteitä ja sen erityispiirteitä. Kirjallisella opastuksella on perusteellinen teoreettinen tausta, johon sisältyy leikkaushoitajien vastualueet ja työnjako. Työ on Lapin AMK:n ja Kemin LPKS organisaation yhteinen hanke.

Projektin tavoitteena oli parantaa leikkaus – ja anestesiaosaston henkilökunnan asiantuntemusta. Projektin aineistona on käytetty aiheeseen liittyvää tieteellistä kirjallisuutta. Kerättyä tietoa analysoitiin kriittisesti osana aineiston valinta prosessia.

Projektin tuotos sisältää taulukkoja, havainnollista toimintamallia sekä koostetta yleisimmistä proteesityypeistä. Tuotoksen oleellinen osuus - leikkaushoitajien toiminta jokaisen perioperatiivisen vaiheen aikana, on perusteellisesti esitelty taulukoissa, joka tukee havainnollista toimintamallia. Lisäksi se sisältää listan yleisimmistä proteesityypeistä.

Projekti on käytännöllinen ja hyödyllinen lonkan tekonivelleikkaukseen osallistuville asiantuntijoille.

Avainsanat
Muita tietoja

Perioperatiivinen hoitotyö, lonkan tekonivelleikkaus, intraoperatiiviset toimet, leikkaussali, projektityö
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Total Endoprosthesis surgery of hip, in professional environment recognized as TEP, is a common operative procedure, which treats impaired joint functioning caused by joint tissue degenerative conditions mainly by osteoarthritis. TEP of hip joint is a widely used surgical intervention in Finland, aiming to improve everyday performance and life quality.

The purpose of this Bachelor's thesis is to conduct a written orientation guide material, which describes nurses' intraoperative scope of activity during primary elective total hip Endoprosthesis surgery for personnel working in operation- and anesthesia unit of LPKS, Kemi. The orientation guide material includes division of work, main tasks and areas of nurses' responsibilities throughout perioperative nursing process. The guide is supported by comprehensive topic theoretical data, research data and process observation. The project is a collaborative study, education and development work between Lapland University of Applied Sciences and the organization LPKS, Kemi. The project work is aimed at healthcare professionals working in operating and anesthesia unit of LPKS, Kemi.

The thesis aimed to support professional development and expertise of healthcare professionals involved in primary elective total hip replacement surgery. Data was collected systematically using scientific literature material and observation of the perioperative nursing process. Collection of theoretical data required appropriate analysis of material and structured selection process. After brief introduction of the topic, project proceeds to theoretical background of the subject including: the division of work and areas of responsibilities, the anatomical structure of the hip joint giving an insight into the concept of TEP hip.

The final product of the project consists of observation tables and illustrative schemes describing nurse's scope of practices and operative models and includes a list of hip prostheses. The goal of the material provided by the project is aimed to be applicable in working environment. Usage of the final product material by perioperative personnel dealing with elective primary total hip replacements defines goal of the project work.

Key words perioperative nursing, total hip endoprosthesis surgery, intraoperative activities, OR, project work
Other information Multimedia presentation.

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FOREWORD

I am immensely grateful to my family for giving me the opportunity to try my academic pursuits abroad. My family is my personnel cheer team throughout all the study years. They motivate and make me go forward towards bigger life achievements. I can hardly estimate the immensity of their support and care.

I would like also to thank Anitta Örn, Lapin AMK school librarian for her attentiveness and help in search of project material as well as I would like to acknowledge my friends involved in project writing process.

SYMBOLS AND ABBREVIATIONS

- TEP TOTAL ENDOPROSTHESIS
- ICU INTENSIVE CARE UNIT
- WHO WORLD HEALTH ORGANIZATION
- ASA PHYSICAL STATUS CLASSIFICATION SYSTEM BEFORE ANESTHESIA
- OR OPERATING THEATRE
- LPKS LÄNSIPOHJAN KESKUSSAIRAALA
- FAR FINNISH ARTHROPLASTY REGISTER
- THL NATIONAL INSTITUTE FOR HEALTH AND WELFARE
- THA TOTAL HIP ARTHROPLASTY
- OA OSTEOARTHRITIS

1 INTRODUCTION

According to Finnish arthroplasty register and National Institute for Health and Welfare, starting from year 1980 the number of primary *total hip arthroplasties* shows a gradual growth with over 188200 surgeries performed, reaching a peak in the year 2015 of 9111 *total hip replacements* with no specification about fixation type or age group. As showed by statics from FAR, female patients aged from 65 – 74 are the majority to get an artificial hip implant, although the distribution of operations does not differ greatly from age groups less than 55. (Finnish arthroplasty register, 2017).

Käypä hoito - recommendation 2015 suggests *osteoarthritis* to be managed primarily conservatively, although worsening condition of the joint might require operative treatment. (Hyvä hoito lonkan ja polven tekonivelkirurgiassa, 2015, p.6).

Arthroplasty of the hip joint is a common surgical procedure in Finland aimed to improve declined physical output and worsened quality of life caused by degenerative musculoskeletal conditions. Based on statics presented by FAR within nearest years amount of performed THRs is expected to grow.

The purpose of the project is to conduct a written orientation guide material which describe nurses' intraoperative scope of activity during primary elective total Endoprosthesis surgery for personnel working in operation and anesthesia unit of LPKS, Kemi.

The aim of the project is to support professional development and expertise during primary elective hip replacement surgery.

As a project intended for staff operating in the unit, it gives a brief image of *hip replacement surgery* and a comprehensive description of the scope of practices performed by care team members treating a patient. The project involves description of nursing practices happening in operating unit managing planned

primary elective total hip replacement surgeries with no specific variation, preference or specification to age or gender group, or fixation type or implant used. Barely touching aspects of perioperative care outside of operation unit, the reader will be able to follow hip replacement care stages starting from surgical unit and landing in recovery room, creating a comprehensive image of the patient care pathway. Anesthesia and operating unit of LPKS Kemi, commissions the project.

Involvement of staff member from operating - and anesthesia unit LPKS Kemi, perioperative nurse with expertise in arthroplasties made it possible to conduct topic-oriented study material, whereas guidance received from university supervisors helped in building structure of the project work staying within the defined objectives during implementation process.

The project is a collaborative study education and development work between Lapland University of Applied Sciences and organization LPKS Kemi. Project serves to benefit for personnel operating in operation – and anesthesia unit of LPKS, Kemi.

2 PHASES OF PERIOPERATIVE NURSING

According to Atkinson & Fortunato, 2000 *perioperative nursing* can be defined as, "The identification of the physiological, psychological and sociological needs of the patient, and the implementation of an individualized program of nursing care that coordinates the nursing interventions, based on a knowledge of the natural and behavioral sciences, in order to restore, or maintain, the health and welfare of the patient before, during, and after surgery". (Hamlin et. al., 2009).

Preoperative phase begins with a surgical decision and finishes with patient transfer to operation team. Planning of process is carried out in multi-professional team and is based on findings derived from patient's data collection, examinations for anesthesia and surgery as well as family and patient guidance. Equipment for anesthesia and surgery associated with patient's individual needs is prepared during this stage. Patient preparation to surgery is carried out in surgical ward, policlinic, ICU or day ward. (Lukkari et. al., 2009, 20).

Intraoperative care includes monitoring of patients' vital signs, medication and anesthesia performed by a professional team, including nurses, nurse anesthetists, anesthesiologists, surgical techniques and surgeon primary. It includes caring process during surgery as well as assistance in accompanying procedures to it. Caring process of the patient during surgery, including such procedures as monitoring of vital signs, medication and anesthesia is counted as a primary part of intraoperative care. Provided by a team of professionals, *intraoperative care* is described as a caring process of the patient during surgery and associated with it procedures. Maintenance of the correct and safe environment in OR, together with provision of sufficient health-related care to the patient are the main goals of intraoperative care. Aimed at maintaining safety and comfort for the patient, intraoperative care can significantly vary in its duration due to the nature of the surgical procedure. Informed consent preceding surgical procedure should be considered. The registered Nurse is the one professional who is in charge of checking patient's ID and documents. In a holding area, intravenous catheter for medication and fluids are applied to the patient. Nursing

care during intraoperative stage is mainly performed by scrub nurse, who is in charge of passing instruments to the surgeon and maintaining sterility of the field during surgery, whereas circulating nurse monitors patient's health situation and should be ready to act in emergency situations. (Krapp 2002, 1304 – 1306).

Postoperative stage starts with patient transfer to recovery unit and finishes when patient does no longer require care related to surgery. In the recovery room, patient's condition after surgery is monitored. Stabilization on patient's normal organ functioning is a goal of postoperative care. During the postoperative stage, attention is paid to patient's condition prior to surgery and during operation process. Monitoring of patient's health situation and patient's discharge home or other care institutions are carried out during postoperative stage. (Lukkari et. al., 2009, 21-22).

2.1 Intraoperative Roles and Practices

Perioperative nurse is a *healthcare professional* who is carrying out *nursing process* during intraoperative stage. Perioperative nurse's areas of expertise include continuous assessment of patient condition, teamwork skills, understanding and implementation of asepsis concept, management of documentation. (Lewis et. al., 2011, 352).

Competency of perioperative nurses is based on education, skills and knowledge. Responsibilities for instrument nurse include management with instruments, insurance in fluency of the surgical process, circulating nurse is responsible for surgery's preparation, and coordination, anesthesia nurse is competent for preparation and maintenance of anesthesia. Varying in level of expertise and being able to perform multi-tasking nurses occupy different parts of perioperative field. Circulating, instrument and anesthesia build a perioperative process; promote work division and clear distribution of roles improving integrity and continuity of the process. High performance of perioperative team is reached, when close ties within the team, share of responsibilities and acceptance of decisions between multi – professional members, are directed on provision of

best possible care for patient. Perioperative team might consist of surgeon, doctors of other specialties, practical nurses and perioperative nurses. Safety can be defined as a scope of recognized and correctly, implemented nursing practices orientated at the patient's wellbeing, which is in general the main objective of the care process. (Karma et. al., p. 8 - 19).

Shoup and Sheridan (2011) defining *intraoperative activities* of perioperative nurses see circulating nurse role as the one responsible for preparation of operating room, monitoring of asepsis, documentation of surgical process, fluid loss and surgical count, assessment of patient condition, guidance the nursing process during intraoperative stage as well as assistance in tasks of anesthesia or instrument nurse as in the process of anesthesia induction, patient draping. Assessment of patient's draping process. Whereas instrument nurse concentrates mainly on surgical intervention taking care of instrumentation, draping and sterile gowning processes. (Lewis et. al., 2011, 352).

Each member of the professional *perioperative team* represents safety culture of whole team, thus working habits should be organized and implemented from the perspective of risks prevention, evaluation of patients' needs and a continuous development process. Adherence to common and essential concepts of safety by each member of perioperative team, at the same time promoting correct own and group working habits, preventing risks, complications and continuous development of professionalism set up grounds of patients' safety culture. (Karma et. al., 2016, 8 - 9).

Developed in 2007 by *World Health Organization* "Surgical Safety List" showed in figure 1 became an important part of the perioperative process. Providing patient safety and improving communication between team members, it is aimed to minimize a complication cases.

Playing an essential role in safety principles of care work surgical safety checklist is a necessary tool used in each surgery and on each stage of the procedure to ensure integrity of care, well-organized level of communication between

perioperative team members confirming care safety, drug safety and equipment safety issues. (Karma 2016 et. al., 2016, p. 20).

Surgical Safety Checklist

World Health Organization
Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia	Before skin incision	Before patient leaves operating room
<small>(with at least nurse and anaesthetist)</small> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Has the patient confirmed his/her identity, site, procedure, and consent? <input type="checkbox"/> Yes </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Is the site marked? <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Is the anaesthesia machine and medication check complete? <input type="checkbox"/> Yes </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Is the pulse oximeter on the patient and functioning? <input type="checkbox"/> Yes </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Does the patient have a: Known allergy? <input type="checkbox"/> No <input type="checkbox"/> Yes Difficult airway or aspiration risk? <input type="checkbox"/> No <input type="checkbox"/> Yes, and equipment/assistance available Risk of >500ml blood loss (7ml/kg in children)? <input type="checkbox"/> No <input type="checkbox"/> Yes, and two IVs/central access and fluids planned </div>	<small>(with nurse, anaesthetist and surgeon)</small> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> <input type="checkbox"/> Confirm all team members have introduced themselves by name and role. </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> <input type="checkbox"/> Confirm the patient's name, procedure, and where the incision will be made. </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Has antibiotic prophylaxis been given within the last 60 minutes? <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable </div> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Anticipated Critical Events To Surgeon: <input type="checkbox"/> What are the critical or non-routine steps? <input type="checkbox"/> How long will the case take? <input type="checkbox"/> What is the anticipated blood loss? To Anaesthetist: <input type="checkbox"/> Are there any patient-specific concerns? To Nursing Team: <input type="checkbox"/> Has sterility (including indicator results) been confirmed? <input type="checkbox"/> Are there equipment issues or any concerns? </div> <div style="background-color: #e0f2f1; padding: 5px;"> Is essential imaging displayed? <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable </div>	<small>(with nurse, anaesthetist and surgeon)</small> <div style="background-color: #e0f2f1; padding: 5px; margin-bottom: 5px;"> Nurse Verbally Confirms: <input type="checkbox"/> The name of the procedure <input type="checkbox"/> Completion of instrument, sponge and needle counts <input type="checkbox"/> Specimen labelling (read specimen labels aloud, including patient name) <input type="checkbox"/> Whether there are any equipment problems to be addressed </div> <div style="background-color: #e0f2f1; padding: 5px;"> To Surgeon, Anaesthetist and Nurse: <input type="checkbox"/> What are the key concerns for recovery and management of this patient? </div>

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.
Revised 1 / 2009 © WHO, 2009

Figure 1 WHO Surgical Safety Checklist (2009).

Keeping up with main principles mentioned in the figure 1 each *perioperative team* has right to align it to the working culture used in that particular environment. Attention prior to anesthesia is paid to patient identification, surgical site, type of surgery, monitoring of vitals, venous catheter application of venous catheter, fluid therapy, approval of operation by patient and its further documentation. Confirmation of such essential things as *surgical count*, readiness and availability of equipment and personnel takes places prior to incision. Management of implemented procedures, aspects associated with postoperative care and used equipment is documented after surgery is done. Concepts mentioned in the surgical list are announced aloud, require straight answer to ensure cooperation within the team, and shared responsibilities. (Karma et. al., 2016, 20-21).

According to WHO 2016 minimization of unwished cases such as life loss or life threatening complications could be done by systematic conformation of

perioperative teams to the following aspects of safe surgery supported by WHO. These include usage of correct techniques while securing patient from side effects caused by *anesthesia* during pain management, readiness to carry out respiratory failure, allergen avoidance, implementation of best practices to diminish incidence of surgical wound infection, ability to manage with severe hemorrhages, avoidance of instrument or material retention in surgical wound, correct handling of surgical specimen, tight cooperation during operation process and organization of monitoring system. (WHO, Patient safety, 2016).

Being a paramount aspect of multi-stage perioperative care, *patient safety* shown in figure 2 "Potilasturvallisuus" should be implemented by nursing professionals in a correct manner in order to avoid any possible complications on its stages. Essential parts of intraoperative stage, including monitoring of vitals, safe transfer, and maintenance of position are aimed at patient safety and maintained by a multi – professional team. Aspects to be paid attention to in OR might include check-up of instruments and removal of damaged ones, right positioning, up-to-date documentation, correct medication, dose and route of its administration and a sufficient team of professionals. (Karma et. al., 2016, 11).

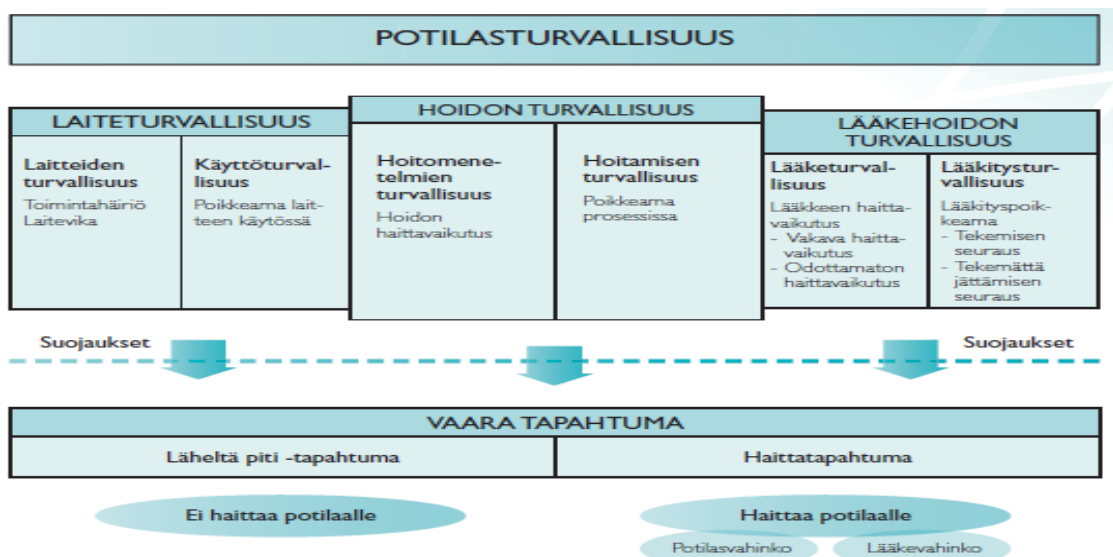


Figure 2 Potilasturvallisuuden keskeiset käsitteet. (Stakes ja Lääkehoidon kehittämiskeskus ROHTO 2007, STM 2009).

Provision of correct musculoskeletal alignment, prevention artery and vein occlusion, prevention of pressure on nerves, skin over bony prominences, earlobes and eyes, support of sufficient thoracic excursion, modesty in exposure and consciousness of patient's individual needs set out basis of care while positioning. Profound care is associated with positioning as great risks including decubitus; joint damage and nerve damage are associated with incorrect positioning as anesthesia blocks nervous systems imitating patient's range of sensitivity in specific parts of body. Positioning and its monitoring is the responsibility of whole perioperative team. (Lewis et. al., 2011, 357).

Anesthesiologist in terms of patient's eligibility for surgery considers clinical examinations as well as laboratory tests. Risks associated with nature of surgery, anesthesia, physical or mental condition of the patient might cause complications during surgery. For patients, admitted to surgery straight from home and classified to ASA – 1 and ASA – 2 groups, preoperative eligibility for anesthesia is discussed by phone involving anesthesiologist and nurse. *Surgical list* is a starting point for anesthesia nurse in preparation for surgery.

Surgical list is used as tool for the anesthesia nurse to familiarize with patient's status, type of procedure and anesthesia. Timesaving procedures, which belong to preoperative stage, such as cannulations can be performed in induction room environment. Aspirator, intubation equipment, medical ventilator, anesthesia working station, cannulation equipment are prepared and checked aseptically by anesthesia nurse. (Karma et. al, 2016, p. 54 - 57).

Patient, positioning and competent usage of equipment are essential issues considered by anesthesia nurse as all activities during the surgical process could potentially alter patient safety. Correct usage of the electrosurgical equipment minimizes risks of burn injuries for patient. Patient safety list developed by the WHO is a cornerstone in the patient safety. (Lewis et. al., 2011, 356).

Criteria, which guide perioperative personnel in their choice of appropriate and correct technique to perform any of the most common given surgical positions including supine, lateral, Trendelenburg, gynecological or sitting position are

based on team members potential and capabilities to guarantee safety of the process for both patient and personnel with attention to minimization of pressure injuries on prominent zone, maintenance of *normal core body temperature* and awareness of possible complications and negative effects, that might be caused by anesthesia induction. Underestimation of patient's general condition and general diseases positioning a patient, predisposes to complications associated with circulatory and respiratory functions, followed by nerve and pressure injuries. *Correct and safe positioning* of the patient for procedure requires good cooperation in a team, usage of correct positioning techniques alongside with involvement of support devices. (Karma et. al., 2016 p. 104 – 109).

Instrument nurse area of expertise is based on professional competency and recognition of nursing and surgical practices in operating room environment as well as thorough familiarization with instruments and their management process, passing techniques, awareness of asepsis, sterility and infection prevention concepts as well as profound knowledge of anatomical structure of the human body. (Lukkari et. al., 2009, 340 - 341).

Instruments are essential in surgery and the instrument nurse should be able to follow surgical process and assist surgeon having comprehensive knowledge of tools. Surgical instruments are classified into several groups including grasping and holding, cutting and dissecting instruments, clamps, retractors and additional tools. Cutting and dissecting instruments are mostly presented by various lancets, scissors and bone-cutting instruments. Grasping and holding include multi-purpose forceps and needle holders. Clamps are used to work with tissues making possible occlusion of blood vessels including artery clamps. Retractors provide better visualization of the surgical opening by separating layers of tissue and holding them in a stable position. (Hamlin et. al., 2009, 192-96).

3 HIP JOINT REPLACEMENT SURGERY

As illustrated in figure 3, the *hip joint* is one of the largest joints in the human body and consists of two parts: ball and socket. The ball is located at the distal part of the femur bone, whereas socket is located in acetabulum, which is part of pelvic bone. Articular cartilage covers ball and socket whereas ligaments connect them. Synovial fluid maintains proper movement of the joint avoiding friction.

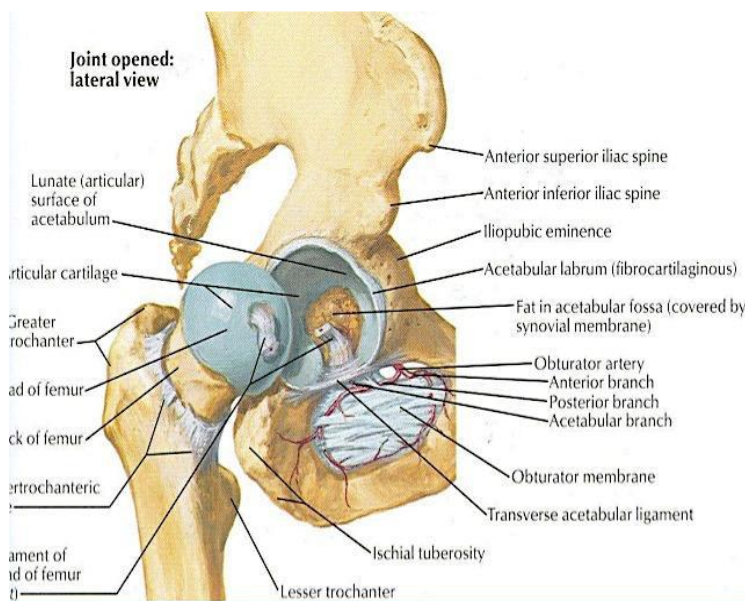


Figure 3 Hip Joint (Iqbal 2016).

Decreased muscle tonus together with various *pathological joint conditions* affected mostly by developing *osteoarthritis* and *osteoporosis* in late adulthood lead to instability in the tissues surrounding *hip joint* and a greater risk of getting a hip fracture in case of a fall. (Krapp K. 2002, p. 1181).

Various conditions causing pain sensation in the joint is a reason to choose operative treatment management, though *osteoarthritis*, *rheumatoid arthritis*, *post-traumatic arthritis*, *avascular necrosis* and *childhood hip disease* are among the most widespread reasons. Hip replacement surgery is a common surgical procedure to treat numerous pathological conditions of *hip joint* or its

consequences, as for instance hip fracture. As it is illustrated in figure 4, total hip arthroplasty procedure involves removal of the worn out joint tissue and its substitution with *artificial components* including debridement of acetabular part replaced by a metal socket and the placement of the prosthetic stem into the femur bone. (Total Hip Replacement 2015).

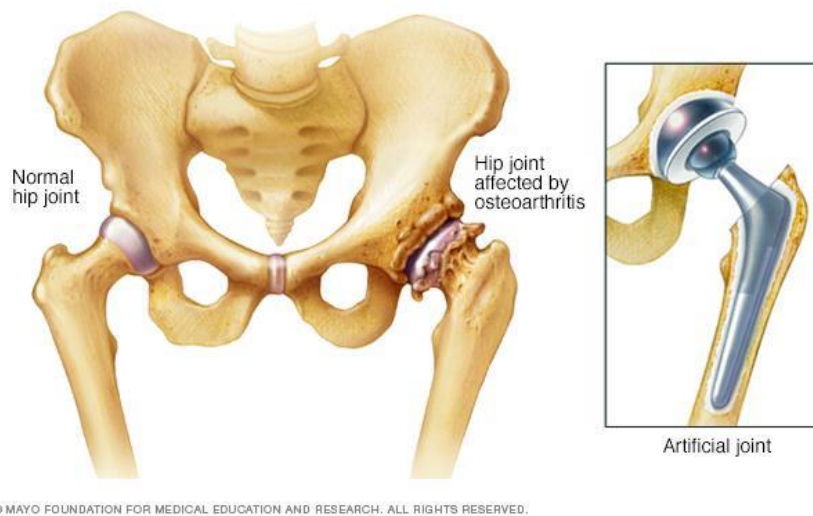


Figure 4 of Artificial Hip (Mayo clinical staff 2017).

Rehabilitation is an essential part of the treatment of a hip patient. This includes early mobilization, walking practices, pharmacological treatment, respiratory maneuvers and regular position changing to avoid any complications associated with pulmonary embolism or formation of blood clots. Rehabilitation aimed at restoring functions and minimization of complications concentrates on weight-bearing exercises, active usage of supporting devices as rollers as well as isotonic and isometric muscle training. (Krapp K. 2002. p. 1182 – 1183).

4 GUIDANCE IN NURSING

Supporting the functionality of unit, communication, defined by Nordman in her work "Viestintä terveydenhuollon organisaatiossa", is oriented to groups like working communities or operating units and plays an essential role in the data transfer process within particular professional areas. Reliability occupies a special role when communication reaches the borders of the professional environment of the working community. Improvement of knowledge and expertise of personnel are target aims of communication serving as an ancillary education tool. Effective communication on different levels of organization together with ongoing development processes and readiness to accept dynamic changes are essential features of a multi structured communication approach. (Torkkola 2002 p. 124 - 127).

Identification of the problem, continuous search for the best possible solution, presence of all members, subject awareness and bearing responsibility for decisions made are essential criteria associated with comprehensive process of decision-making and caring process in general. *A message delivered orally or as a written material ensures effective communication and cooperation in the organization, where patient – orientated process serves as a target aim. Accessibility of the message, its multiform and easy access to it from various groups of professionals participating in treating the patient define communication and message concepts in the caring process. (Lauri 2006 p. 107 - 109).*

In her work Karhapää 2013 completes mentioned concepts described by Torkkola 2002 and Lauri 2006, emphasizing that comprehension of *communication skills* take a particular role in the *Social and Health Care system* by describing its multidimensional level of organization, levers of influence on practices used in work community by means of *orientation or guide material* aimed for customers or caregivers like workers or students, as well as a level of interaction between interested party and organization.

Referring to the statements generalizing mentioned idea, it is possible to characterize *communication* as an ancillary tool of study development process, accepted and widely used on different levels of various organizations. Though varying in form and data delivery approaches, communication acts as a *linking part* between an organization and the *academic field*, which might be presented by educational institutes, individual parts or other sides, interested in the development process of a particular community. The *goal of communication* is to improve practices within working units by development process work. As working units might deploy various methods of developmental work, the main aspect rising is associated with the *guidance process* or setting up a study environment aimed towards the benefit of individuals or teams with an attitude towards education.

Deterioration of used practices together with a need for improvement of professional expertise might be a cause to introduce guidance as a tool to bring renovations to existing working model. Clarity of perception of own guidance as well as motivation from the conductor's side ensures successful a guidance process. According to Vartiainen 1989, working guidance is a part of the orientation process, which aims at improving practices and working output through educational and simulation approaches. (Frisk 2005, 13, 49).

Reliance in the *written orientation guide material* and its readability, approachability and comprehensiveness of its data help organizations to keep new members of the team focused and curious while researching new and unfamiliar content. An ability and wish to listen to feedback defines possibilities of the newcomer or the organization to benefit from various methods aimed to improve and develop the practices. Scope of practices deployed to involve the new worker into the workflow might define an orientation process. Emphasizing concepts of existing skills and studying of new concepts define the objectives and goals of the orientation process. (Kupias & Peltola 2009, p. 78-79; p. 86-88).

Summing up abovementioned conceptualization demonstrates the particular value of interaction skills in care work. Commitment to ground principles of

communication aims at continuous development and renovation of practices given by professionals occupied in *social and welfare environment*. It involves updated material, which would improve awareness in the professional field and brings a new viewpoint on the phenomenon of nursing work.

5 PURPOSE OF THE PROJECT

Definition of clear and implementable objectives, precise setting of limitations and goal orientation from the beginning navigates the project during the entire period of work helping to adhere to the realization model and achievement of the desired outputs. Purpose is a tool, which supports project work and defines approaches planned to be implemented for problem solution process or goal object of study work. (Silfverberg 2007 p. 27; p. 154).

Flexibility in interpretation of material obtained through process of observation, opportunity to develop new models, study environment and the nature of the research problem set project as the most suitable method to conduct study. A study visit to the operating theatre and an open interview of perioperative team professionals used to investigate needs on research material in the area of *hip replacement surgeries and associated nursing process*. Based on a discussion, decision made by perioperative members, nursing professionals have agreed on a need for an update of the intraoperative nursing process during hip *arthroplasty*. *Personal interest in the topic area, possible practical and data beneficence have contributed a lot in choosing project work to be done* in this area. Guidance material was planned to be brief and clear, reflecting the most essential aspects of the nursing process during intraoperative stage. Importance of tight cooperation, adherence to principles of safety and attitude towards successful process of surgical operation define the most essential aspects of the planned orientation material.

Purpose of the project is to conduct a written orientation guide material, which describes nurses' intraoperative scope of activity during primary elective total hip Endoprosthesis surgery for personnel working in operation and anesthesia unit of LPKS, Kemi.

Aim of the project is to support professional development and expertise during primary elective total hip replacement surgery.

6 PROJECT PROCESS

6.1 Organization and Limitation

Adherence set dates, logical performance activity together with avoidance of overload with work are essentials of well-organized timetable. Usage of a calendar and structural division of project into the smaller parts might be helpful in staying within the defined timetable. (Virkki., Somermeri, 1998, p. 50–51).

Limitation of chosen topic clearly indicates focus on knowledge and message, which it carries on. In a quantitative scientific paper, commonness of project signifies its flexibility, whereas clarity eases understanding of researcher's capabilities and reasonableness of project for reader. (Hirsjärvi et. al., 2007, p. 81-82).

Personnel, target group and organization are clearly defined in the project. Working methods as well implementation of project belong to management and instruction process and based on demand. Broad presence of various forms of organizations as well as working methods allow wider working field. External instruction is based on cooperation with stakeholders and aimed to achieve an approved and usable final product. Instruction tries to find answers on aspects associated with accuracy of goals and their achievement, content and limitation of project. Efficient distribution of resources, time management as well consideration of alternative directions of work development are reported. Project results are carefully documented. *Areas of supervision include processing of project plan and changes associated with it.* Monitoring of quality and usability of results, monitoring of schedule and aspects related to the usage of resources. (Stenlund, 1992, 55-57).

Project is limited to *planned primary elective total hip replacements*. Nursing process is limited to *pre-, -intra and -postoperative stages*. Guidance material for most part involves orientation to *intraoperative scope* of nursing practices during

THR. Project is ordered by operating and anesthesia of LPKS Kemi. Unit has given a staff member, who is in tight cooperation with project writer. The project is a collaborative study, education and development work between Lapland University of Applied Sciences and the organization LPKS Kemi. The project work is aimed at healthcare professionals working in operating and anesthesia unit of LPKS, Kemi.

6.2 Implementation of Project Process

Project can be described as a *scope of structured and scheduled tasks managed by the party, supported with necessary resources*. Progressive and flexible project process is associated with correlated concepts of planning, implementation and evaluation. Monitoring of project progress like staying within defined goals and set of schedule is managed by plan introduction. (Silfverberg 2007 21, 22, 42, 43).

Orientation is a study-oriented guidance process, which could be described as scope of methods aimed to support practices of particular working community, sets an improvement of professional expertise and management of the collaborative occupational ties as main target goals. (Frisk 2005 p. 41).

Need for study - oriented material associated with nursing process during hip replacement surgeries has been identified by staff in operating and anesthesia unit of LPKS, Kemi. Conduction of updated orientation study material is a purpose of the project work. Studying subject's phenomenon using various methods and later organizing material into applicable structure define idea of project work. (Hirsjärvi 2007 p. 32).

When major concept of the project became clear, methods aimed to define idea and its further implementation were thoroughly examined. Initiatory form of guidance product and its contents were identified at this stage and later confirmed during implementation process. *Limitation of project was defined already on early stage of project development process.* Limitation was done to make work more

centralized and subject orientated. Orientation to existing material and theory helped to identify central concepts of studied phenomenon.

Project product can be found contains table with presented their scope of nursing practices as well as perioperative nursing process of hip replacement patient. Writing process based on approach and statement is directed by general idea, objectives, and opinion and limitation concepts. *Approachability* and *accessibility* of work is defined by method deployed to deliver data to consumer or reader is characterized by the concepts of transparent language, visibility and objectiveness. Structuration, logical structure like titling, consistency and simplicity of project's idea ensure progress and wholeness of product guiding writer during his process of writing and improve reader's perception of work. Goal - oriented and structured study process involves early orientation and self-familiarization with phenomenon, process of data collection, planning of implementation method, scheduling and reporting. (Hirsjärvi 2007 p. 41-44, 63-65 273 – 276).

Project is a part of continuous development process of care practices in LPKS, Kemi. *Orientation guide material* involves description of modern caring practices, approaches and interventions done by perioperative nurses *during primary elective total hip arthroplasty*. Orientation material is aimed for healthcare professionals working in operating and anesthesia unit of LPKS Kemi, as well as external institutions or guests of the department. The whole elaboration process of this project can be divided into several stages like self-familiarization with topic are, search for implementation methods, investigation of an appointed assignment, planning the project work, familiarization with an issues and data collection, analysis of findings and reporting. *Project was assigned by operating unit of LPKS, Kemi*. Interest to investigate phenomenon of patients having various musculoskeletal conditions, chronic diseases of joints and traumas made it finally possible to organize a visit to operating and anesthesia unit of LPKS Kemi. Perioperative team has informed on particular demand in update of picture showing scope of activities performed by perioperative team during primary elective hip replacement surgeries. Nurse specialized in care of patients undergoing *arthroplasty surgeries* has given introduction material and an old –

fashioned *model of hip replacement patient in operating unit*. Since that time practices have changed and the goal was to update material, bringing innovations and staying within the limits of the topic. “Lonkkaproteesipotilaan päivä leikkausosastolla” in its original name was a fly - off model used to conduct project. After getting a task, it was necessary to get familiarized with phenomenon and conduct profound research of topic, going through literature material, scientific journals, videos and nature of surgical intervention. At the same time, it was planned with instructor at operating unit of the hospital to organize a study visit and participate as a spectator in primary elective replacement surgery in order to conduct observations. *Observation was one of the methods used to conduct project and collect reliable data of practices done by perioperative nurses.*

Observation can be of various forms either direct or participant depending based on studied phenomenon. Information can take various forms under one of the data collection methods known as observation. Choosing observation as method requires a thorough thinking and correct application area as there are some observations, which are not applicable to specific phenomena. Participant observation involves researcher to take part in phenomena he studies sometimes requiring preceding guidance. Time spent on data acquaintance varies individually and generally depends on researchers experience and self-knowledge of the material. Usage of research diaries is one of the essential requirements to observation as data collection method. Preceding planning, simultaneous acquisition of data and its critical analysis save time, resources ensure comprehensiveness of observed and conducted data. (Kananen 2011, p. 48-50).

According to Polanyi 1983, observation can be characterized as process of making conclusions upon symbols, which have particular meaning. As stated by Merleau-Ponty, in the work “Phenomenologie de la perception” 1945 observations may vary due to approach method. However, better comprehension of a context comes with participation in the same environment with observed phenomenon. Scientific method of data collection performed in natural environment of

phenomenon relates to a concept of observation. Observation proves whether observed group acts in a manner, they claim to work. (Vilkka, 2006 p. 7- 33).

Generally, having basic knowledge and nature of procedure it was managed to conduct notes of the *intraoperative process opening concepts of perioperative team members' roles and responsibility areas during surgical intervention*. Conducted material was later analyzed and organized into separate document making it easier further work and progress. *Dairy project* was used the same time to ensure consistency of managed work and improve reliability of findings making whole project understandable and approachable for reader and assessor.

While conducting and following study phenomenon, running an activity day work book in a form of *sketchbook* is helpful method for researcher to follow his working process and progress moreover its regular update keeps study items well – structured, easy approachable and ready at hand for usage. (Hirsjärvi et. al 2007, p. 45).

Dairy project helped me to stay concentrated on study issues and guided me across the whole study process. It was convenient to reflect own ideas and thoughts in a written way, to see day workload and output for instance when doing translation of literature texts and mark any other events linked to project work like guidance with supervisors at the university, meetings with instructors of project in organization, own scheduling. Process of collecting theoretical material has occupied a notable period as most of *literature material* used was written originally in Finnish language and required a reliable paraphrasing staying within the general idea of data part. After successful collection of theoretical material, the topic of this project was clear enough to continue working on it. Orientation to nursing practices in surgical ward of orthopedics and traumatology as well as material and study environment offered by operating unit supplied has made it possible to create a comprehensive image of hip patient in the perioperative nursing process. During practices in operating unit it was possible to participate in intraoperative process as an assistant of instrument nurse which improved knowledge, own experiences and general features of the procedure. Selection of

meaningful and proper concepts, limitation and reorganization is multilevel and associated with project ending process. (Hirsjärvi 2007 p. 54). Last months of project work were symbolized by intense quality work due to compressed timetable and need to concentrate on many things at a time while working on a projecting fulfilling objective and goals of the work. Finalization of the project was done after corrections were done based on feedback during instruction hours. Positive feedback received from project supervisor from operating and anesthesia unit has assured writer of being on a right track in finalizing the work and reaching defined aims. Product takes a form of updated model of hip patient as well as presentation containing real – image photos of the perioperative process. As far as revision of study project was done, objectives of the work fulfilled, end product in a form of new orientation material was formatted it is possible to say that project implementation has been successful and it is time to end up project work.

Purpose of the project is to conduct a written orientation guide material, which describes nurses' intraoperative scope of activity during primary elective total hip Endoprosthesis surgery for personnel working in operation and anesthesia unit of LPKS, Kemi.

Aim of the project is to support professional development and expertise during primary elective hip replacement surgery.

7 EVALUATION OF THE PROJECT

The purpose of evaluation is to identify the project's effectiveness and results and to reflect on experiences obtained during the work process. As evaluation is done after the work, it is no longer able to benefit the work itself. Acknowledgment of the assessment, based on systematic data processing with emphasis on productivity where results orientated for further development work ensured by independency from implementer or provider define evaluation as supportive tool in critical analysis of the project work. (Silfverberg 2007 p. 120 – 122).

*Evaluation of the project is of dynamic and continuous process as it was conducted through all stages of the project implementation process. Mobilization and of instructors from organization was one of the methods to ensure operability and functionality of the project's final product. The goal to create a product that is as practically useful as possible was defined in the beginning therefore attention to critical guidance was considered during the writing process as all needed changes were brought in accordance with a set schedule. However, no specific table or chart was created to prove the statement. Daybook can be used as orientation tool, which clears up the methods that were deployed. In order to get a quality product, profound orientation to material associated with nursing and medical practices caring, a *hip arthroplasty* patient was studied to bring reliable outcome. To make the material easy readable and approachable for the reader, importance of text transparency and clear language was highlighted. Orientation to earlier studies in the nursing field was necessary to be familiarized with the writing process and to stay within the general frames of the project work.*

Definition of clear contents was maintained to allow the reader a better perception of the work done. At the beginning, a goal was established to make a simple and practical project. This goal served as a guide throughout the implementation process and served as a reminder not to let the project become too large and the workload too excessive.

Feedback, given by instructors or other involved parties as fellow students, affects objectivity, applicability and approachability of project's data maintained during implementation stage of the work. (Hirsjärvi 2007 p. 49).

As a project is associated with various types of subjective opinions, expectations and feedbacks, an evaluation of a project's product should be based on its objectivity as something having strengths and weaknesses identifying areas for further development and growth. A successful project can be defined by the fact that the desired goals have been accomplished within the set timetable and expenses. (Ruuska 2006, p. 46; p. 251.).

The updated intraoperative care model of patient undergoing hip replacement surgery was built up upon an earlier scheme, obtained findings, literature and scientific material. Staying within the original objectives and planned goals of plan throughout the whole writing process helped to open and get an idea across to the target group, the personnel of the operating unit. After introduction of the changes, the model was approved by the instructors in the organization LPKS, Kemi. The original process was outdated and required introduction of up-to-date practices and data. As nursing practices develop and change with the time, the updated model might require further development thus being fully adaptable for further modification and involvement of new information. The project results are applicable in a real environment and their reliability has been evaluated.

A presentation of project product was done in order to fulfill requirements of a complete and consistent project work, improve reliability of study work, satisfy writer with achieved results and to highlight its significance and importance for the working community of operating – and anesthesia unit environment of LPKS Kemi. The presentation included major aspects of the project work including defined purpose and aim, introduction to the research problem, contents and possible further development. Even though the updated operating model has not yet been tested in a real environment it might have a high potential to influence modern practices associated with nursing practices of hip replacements. Assessment of project's succeeding has revealed its usefulness in the development work of LPKS environment, particularly operating – and anesthesia

unit environment. The project product might be used to update other works linked to hip replacements or serve as study orientation material. Based on the feedback received from the audience and overall excellent assessment mark from project supervisor in the organization it is possible to state that the project work has been managed successfully and set goals have been achieved. Self assessment process involves examination of the process of purpose and aims defined and their fulfilment, Project succession with university guidelines have been achieved and the work has been assessed following the criteria of Lapland UAS. The writer is satisfied with the work output and wishes the project to stay practically beneficial for working society and the academic field and hopes for its further development and renovation.

8 RELIABILITY AND ETHICS

Documentation, consistency of interpretation, reliability from informant's perception and saturation are counted as essential aspects of reliability in qualitative papers. Concepts of reliability and validity naturally are more proximal to and therefore applicable in quantitative scientific data due to the origination in natural sciences, however they remain essential for qualitative papers as well and should be considered in the preliminary stage of a thesis. When it comes to credibility of work in qualitative papers, documentation appears to hold the highest positions. Structured process of data collection and methods used are documented by the use of diary project thus creating a solid frame of work done. An approach used to understand and further explain processed material differentiates, therefore having no structured model, which could be applied to several works, however alike results based on double check give better credibility of collected data. Acceptance of material by a second person symbolizes that data is valid based on the assessment of that particular interpreter, however sometimes it is not sufficient and additional evaluations are necessary to meet the requirements of the study until results don't bring any new data. (Kananen 2011 p. 66-69).

The project work was guided by the usage of reliable topic – related material and sources. The significance of scientific theoretical literature material has been highlighted in this work. Critical process of data selection and application in the project work has been an essential part to show

Ethical aspects of study work are based on early adherence to criteria of good scientific culture and habits which guide the writer throughout the whole process of research. Acknowledgment of sides and their rights participated with attention to study environment, consideration of human rights as an integral part of the study process as well as consideration of juridical, anonymity and archiving aspects of material dealt with. (Hirsjärvi 2007 p. 23 – 27).

Conformation to listed grounds in *Code of Ethics for Nurses 2006* among which are veracity, beneficence, confidentiality and non-maleficence assures writer's adherence to moral stands while doing research paper. Safety, well-being and dignity of participants are essential aspects in research project. (Moule et. al., 2014, 48-59).

High moral and ethical standards guided the writer while conducting the study project. Respect of human dignity and rights participated or been involved in the project is highlighted. Project aims to benefit academic field and increase awareness of the subject within professional nursing communities.

9 DISCUSSION

9.1 Requirement - creativity

The concept of continuous work, up-to-date data and development of material is essential for each studied phenomenon. Due to rapid and fast changes in working models, techniques and rules, the need for quality practical material will always be in demand. Accumulation of knowledge and the possibility to implement material and findings from coexisting fields allows for continuous and non-stop improvement of practices. Adaptation of project findings in real working environments serves as support material for experienced professionals as well as an important tool of self-orientation for new coming members in the working society. As this project was done based on the grounds of the previous version and data collected from various sources, further research of the paper is possible whenever needed. Project writing is always a creative process as you never know in which direction you might finally go, however commitment to general instructions and guidelines is essential on every step of it. Self-challenging for the sake of knowledge were associated with translation, search of material and their presentation in an appropriate form for the overall integrity of the work done. It is admitted that several parts of translated and paraphrased material could contain original words due to difficulties associated with searching for appropriate meaning of described phenomenon.

9.2 Reconceptualization

Working on the project helped to open a whole new area of nursing science for me. Researching a phenomenon of perioperative nursing and dealing with demanding treatment cases have generally improved my knowledge in care science. Studying project topic area I have familiarized myself with treatment methods of patients having various degenerative musculoskeletal conditions, traumas. Challenging nursing process in highly technical environment has again proved for me how important indeed are the aspects associated with continuity,

safety, wholeness and endured of patient-oriented care process. The project work allowed me to participate in several hip replacements for better understanding of the phenomena I was working on. Most of the project work and its most time-consuming parts, such as search for theoretical knowledge, were done nearly a year ago. Accumulation of information from various existing reliable sources required concentration and patience. Many times I considered fellow students' support as an important tool in building my project work, it was important occasionally to get support and self-confidence with the project. Then it would be important to highlight the topic of single or pair work on a thesis project. In this particular case I have experienced several difficulties associated with the amount of material needed to be processed for the successful writing of the project. Pair work could be a perfect solution, but as it was not possible to find other students turned in the same direction and so I had to continue writing alone. From my point of view the project is well-structured and fulfills required instructions. The consistency of the project allows the reader to easily go through the material without losing sense or meaning of the context. The project involves an external reader into the process starting from a brief orientation and general information of the topic, gradually awakening an interest in the reader and then switching into more specialized and accurate data area. The goal of this method is to keep the reader curious and motivated while assessing the work. The researched topic is well known in both scientific and nursing worlds. As the number of the procedures is expected to grow, thus competence and knowledge of nurses dealing with this type of procedures should be up to date and have a good scientific based practice. The complexity of the intervention, its significance in improving quality of life and my own motivation were main factors for choosing this study phenomenon to work on. An existing model of hip replacement patient served as starting point in conduction of the research paper. Now when the updated orientation guide material model is done it is possible to see how the process, in fact has, changed and what new interventions are involved nowadays. This is from my point view is one of the best ways to see progress and development in something. Ethical aspects were strongly considered during the study process, especially when involving patients e.g. during the process of observation and photography needed for the multimedia presentation. Permission from patients,

supervisors and other nurses involved was given in order to successfully conduct project goals. Writing the project work was a first time experience for me. Doing a research paper which would have a practical significance in a real professional environment motivated me and kept me interested in working on it. In the beginning due to the lack of experience and little knowledge of how actually one is supposed to conduct a research paper, I had to study topic related material, ask for advice from fellow students, instructors and other people involved in the process. Working on the project, I have reassessed how significant and important research is for the scientific world and nowadays practices in nursing and other fields as results and findings give us an access to objective and consistent data, which has been examined and proved reliable. This project work is undoubtedly beneficial and practically applicable in real work environment. The material and findings used are up-to-date and are of reliable nature. By the means of the study project one can familiarize oneself with current nursing intraoperative practices associated with hip replacements, improve competence and knowledge in this area of nursing science. The project product is goal orientated and serves for healthcare personnel and other professionals or students dealing with hip replacements and can be used in various ways depending on the need, but mostly as study orientation material. Development of study material is a dynamic process, which requires constant involvement of new knowledge and data to stay practically applicable and beneficial. The present project becomes a part of hospital modernization strategy to improve own practices and methods to offer the best possible care for the patient.

9.3 Dynamic process

Further development of the studied problem is one of the major aspects defined to meet requirements of comprehensive and complete project work carrying long – lasting beneficial effects on nursing practices and in general academic field. From my point of view, the researched area cannot be defined as a challenging one as it has accumulated multidimensional knowledge basis and has been thoroughly examined earlier, however it would not be appropriate to underestimate the need for new research material that might contain refreshed

data and viewpoints of an issue. Thus, it is necessary to highlight the need for continuous development of the phenomenon in the healthcare field. Possible development areas and directions might include guidelines for personnel working within operation unit environment as well as strategies aimed at internal development and update of practices within organization as an institute of healthcare services.

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APPENDICES

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|-------------|----------------------|
| Appendix 1. | Observation. |
| Appendix 2. | Project diary. |
| Appendix 3. | Operating model. |
| Appendix 4. | Choosing prosthesis. |

Appendix 1. Observation

Table 1. Surgery day. Transfer into Operating and anesthesia unit of LPKS, Kemi.

Surgical ward.	Operating and anesthesia unit,	
Preoperative phase begins on the surgical ward, usually 3B from which patient is coming for an elective planned hip replacement. Often patient arrives on ward early in the morning. Responsible surgeon might come to greet a patient, give brief intro about process and mark operated area. Patient receives instructions and guidance upon upcoming surgical procedure, surgical gown, pressure stockings, and sometimes sedatives in case of anxiety. Patient is fasting and body hygiene is maintained properly, however nurse one more time goes through questionnaire upon medication, food intake, skin condition. After that, either surgical nurse or nurse from OR arrives to transfer patient for planned intervention.	Circulating nurse.	Instrument nurse.
	<p><i>Preparation of the OR e.g. availability of supporting devices used in positioning, traction device for lower extremity, leashes, Unitrac tube, lock with a bar for the abdomen region, "kylkipatja", "hartiapehmuste". "Imut 2 kappaletta", "dia/savuimu plaan jalkapäässä leikattavalla puolella", "sementtipoljin". Check prosthesis components and availability of trolley with implants. Trolley with catheters should be always available. Open LESU, ESKO and x-ray images on the screen in front of operation table and doctor. Order "tilauskaavake" and "pesusykeröt". Check type of anesthesia.</i></p>	<p>Confirmation of availability of equipment required for hip replacement including:</p> <ul style="list-style-type: none"> • hip package • suction bags • Zimmer® or Stryker® with rinse set • isolation for camera (Unitrac) • lancet 22 size • required amount of gloves • set of scoops • set for bone material including bone biter, storage can, package for freezer, test vial, vial for culture test. <p>Instruments:</p> <ul style="list-style-type: none"> • basic set of tools for hip replacement surgeries • drill as Zimmer Stryker S7/CD4, Hall/PowerPro. • Pad saw and batteries plus blades. • In case of fixation with cement, set M or L to mix cement is needed plus cement pressurizer. L set requires pressurizer separately, 2 x Refobacin 40 or Optipac 60/80 hydrogen with mixer, räkämukatetri and special gloves to handle cement. • Clock. <p>Implants including cup reamers, cups and stems of different kind and size:</p> <ul style="list-style-type: none"> • Summit – Pinnacle • Accolade – Trident • Exeter • C-stem

Table 2 Arrival to operating unit, preoperative scope of activities in Operating and anesthesia unit of LPKS, Kemi.

Receiving patient, induction room environment.
<p>Patient arrives to the unit and after proceeds to the induction room either of OR 4 or 5 generally used for "clean" surgical procedures. Induction room serves nowadays as a space to keep all necessary equipment for intervention as prosthesis packages, draping material and other secondary. One of perioperative team members receives patient. Surgical nurse from the wards gives a brief exact report upon patients' ID, operation planned, operated area, medication in use, last medication intake, allergies, presence of wound, skin integrity, general condition. Patient is awake and conscious thus usually participates in the report confirming prior report of surgical nurse. After that patient is transferred into OR from induction room and ready to participate in intraoperative phase.</p>

Table 3. Intraoperative phase in OR. Operating and anesthesia unit environment LPKS, Kemi.

Intraoperative stage: Transfer into operating room, anaesthesia induction & surgical procedure.		
Circulating nurse	Anaesthesia nurse	Instrument nurse
<ul style="list-style-type: none"> • Circulating nurse accompanied by anesthesia nurse receive patient in induction room. • Guide patient to proceed into operating room, note if patient is not capable to do so transfer can be done directly from the bed near operating table • Connects to monitoring of vitals including ECG, blood pressure, and oxygen saturation in tissues(NB if general anesthesia NMT meter and EEG meter. 	<ul style="list-style-type: none"> • Gets and iv access by placing cannula, begins fluid therapy, gives antibiotic prophylaxis. • Prepares equipment for spinal anesthesia, disinfects injection area and assists anesthesiologist during anesthesia induction procedure. • Monitoring of patient's cardiovascular function, respiratory function, maintenance of normothermia, vitals. • Documentation of anesthesia process, patient's condition. 	<ul style="list-style-type: none"> • Transfers instrumentation and other needed equipment into the operating theatre. • Assists team-members in positioning of patient. • Maintenance of sterile field, preparation of instruments. • Handling instruments, assisting with equipment. • Dressing of the surgical wound. • Removal of drapes and further process of instrumentation into sterilisation department.

Table 4 Circulating nurse tasks during intraoperative stage.

More of circulating nurse responsibilities.
<ul style="list-style-type: none"> • Promotes patient safety being with patient. • Guidance of patient during positioning for spinal anaesthesia, tight cooperation with anesthesia nurse and anesthesiologist. • Surgical positioning. • . Surgical site disinfection. • Scrubs surgeon in washing room environment. • Activation of gas evacuator, suction device, water rinse, Diathermy. • Documentation work with programs Implant DB®, Tissue DB®, LESU®. • Handling Bone sampling according to guidelines. • Handles additional equipment needed e.g. surgical gauzes, dressings, needles, implants. • Monitoring of surgical process attention to safety, asepsis and maintenance of sterile field. • Assists in removal of drapes, disconnects from monitoring. • Safe transfer into the bed and proceeding to recovery room environment.

Table 5 Postoperative phase. Operating and anesthesia unit environment of LPKS, Kemi.

Postoperative phase: recovery room environment.	
Anesthesia nurse	Circulating nurse
<ul style="list-style-type: none"> • Reportation to recovery room team. 	<ul style="list-style-type: none"> • Connecting patient to monitoring system.
<p><i>Arriving to recovery room</i>, circulating nurse applies monitoring devices while anesthesia nurse gives a report to recovery room team. Care of patient in the recovery room involves pain management with paracetamol, NSAIDs, weak and strong opioids as well as gabapentines, touch responsiveness testing, external condition of the surgical trauma, basal core temperature, urine output if catheter used, and movement in lower extremities, monitoring of vitals and general condition of patient. Operation theatre nurse gives report to recovery room nurse upon patient's condition, surgery done. In recovery room patient stays as long as his condition requires monitoring.</p> <p>Instrument nurse brings instrumentation to sterile unit for further process and sterilization process.</p> <p>Circulating nurse returns to the operating room to replace single – use equipment as suction tubes, diathermy wires, gas evacuator filter, collection pouches, implants into the trolley from board in the induction room, x – ray images of next patient.</p> <p>Circulating nurse also notices operated side and layouts equipment accordingly including devices and lamps.</p>	

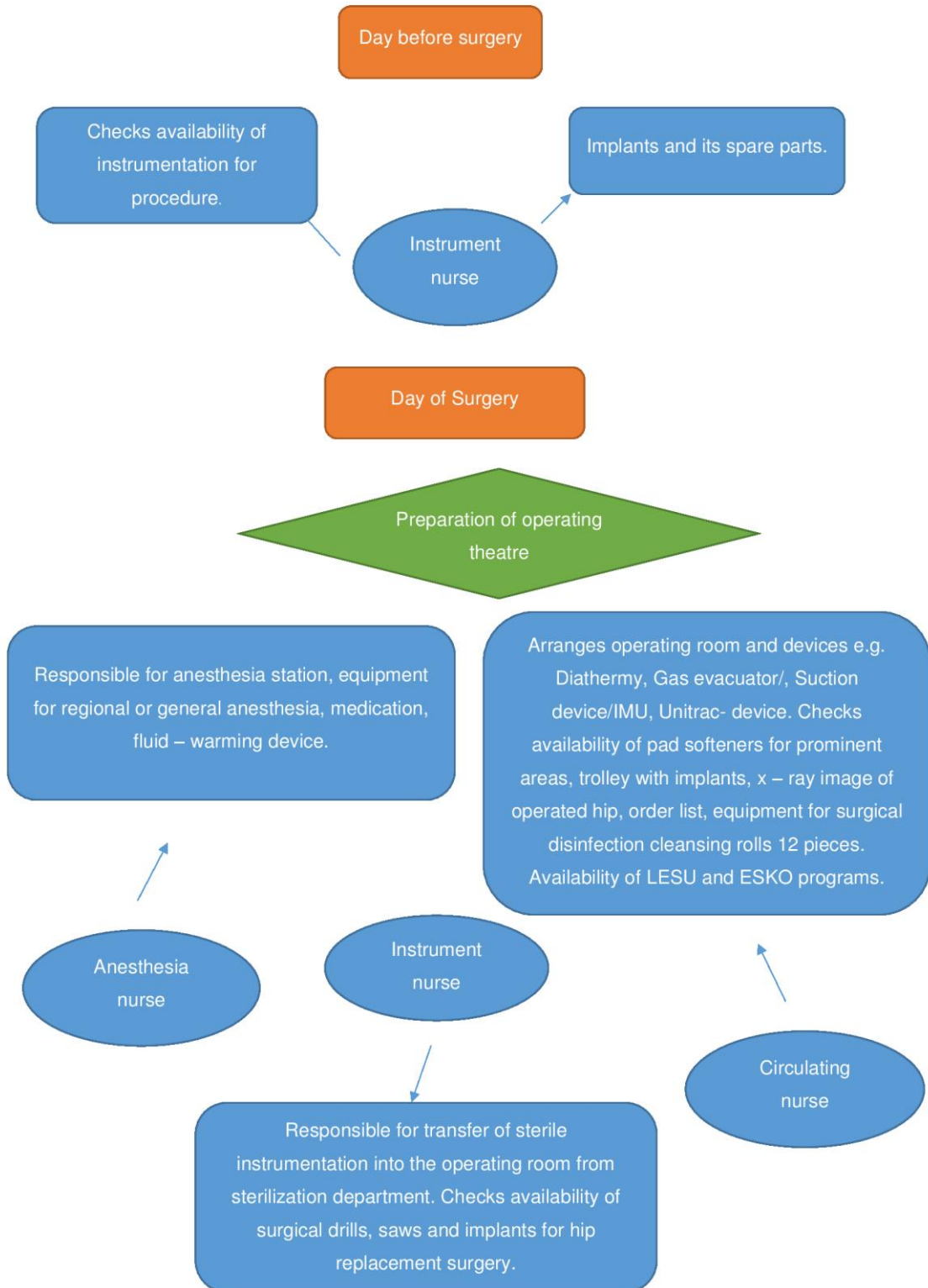
Appendix 2. Diary project.

Data	Event
<p>19th January – 29th January 2017.</p>	<p>Appointment with teachers in the university upon possibility to conduct project for operating unit in länsipohjan keskussairaala. Decision – making process to request study problem from OR unit. Making visit to leikkaus – ja anestesia osasto and first appointment with nurse specialized in arthroplasty. Identifying research problem and possible methods for its solution and practical implementation. "Day of hip prosthesis patient in the operation unit" operating model was identified as study problem. Operating plan has outdated and needed refreshment due to changed hospital and nursing practices. Assessment of model, discussion upon implementation methods and limitation of work. Identification of objectives and goals of project work. Planning observation method as one of the primary ways to conduct project work. Planned visit to observe primary elective hip replacement.</p>
<p>1st February 2016 – 5th February 2016</p>	<p>Successful comprehensive observations of hip replacement procedure. Process of collection data and making notes upon perioperative process during procedure. Orientation to the phenomenon and study problem, self familiarization and studying topic</p>

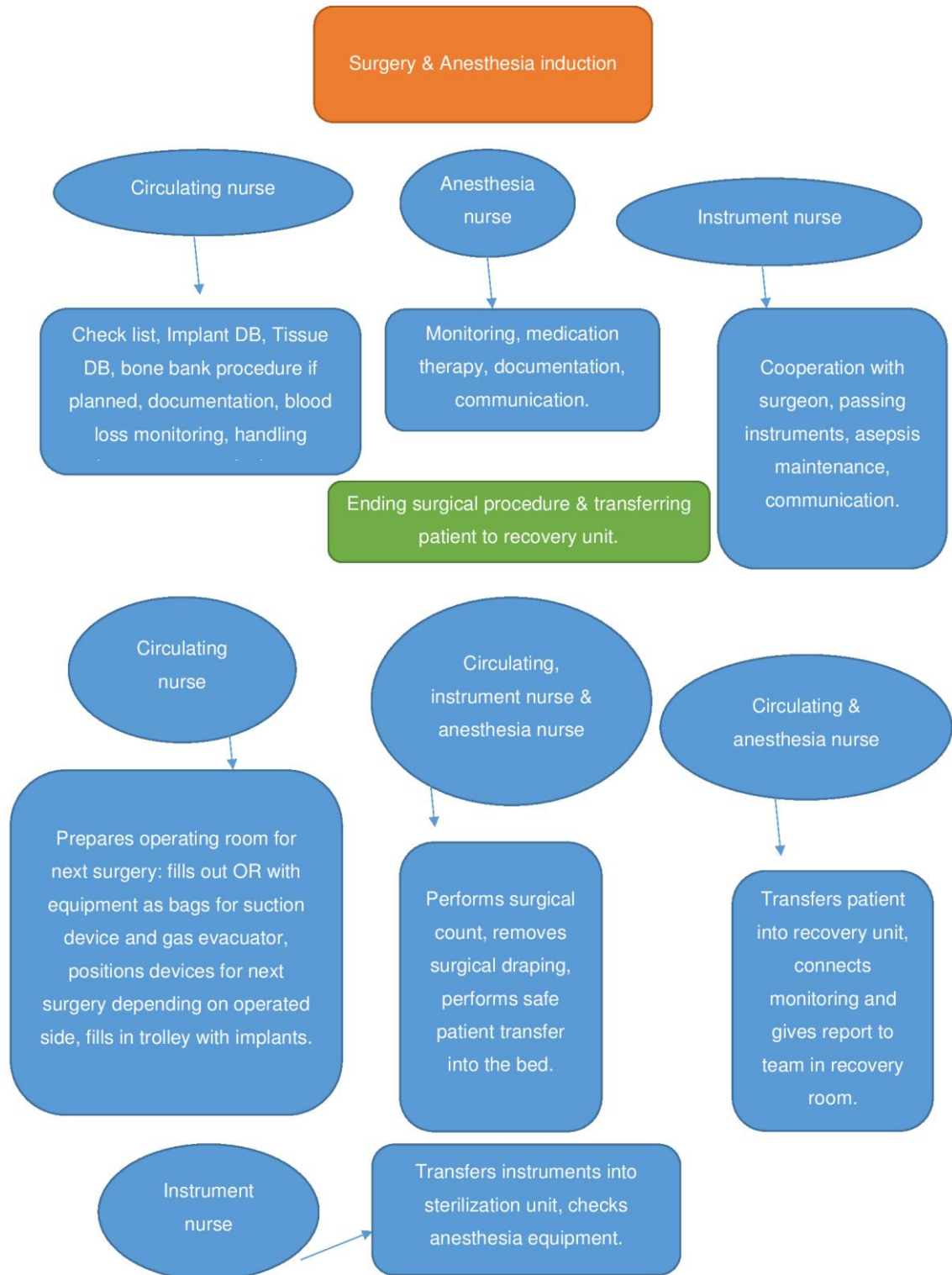
<p>February, March and April 2016</p>	<p>using literature material, scientific databases and other scientific researches. Critical assessment of conducted notes and selection process. Process of plan formation for study project. Usage of material conducted in Finnish and English languages, building up theoretical background of study project as for parts "Grounds of Perioperative Nursing" and "Joint Replacement".</p>
<p>7th April – 18th May 2016</p>	<p>Presentation of study project plan and theoretical background to supervisors in länsipohjan keskussairaala leikkaus – ja anestesia osasto. Based on feedback both theoretical background and plan were still lacking structuration.</p>
<p>17th September – 16th December 2016</p>	<p>Bringing corrections and changes to the plan according to discussed instructions and corrections necessary. 27th October meeting with supervisors and guidance related to the thesis, discussion of final corrections needed. 18th November thesis plan approved. Preparation of assignment contract and collection of signatures. Intermediate assessment of project progress in the unit with supervisor, involvement of more material as well as conduction of observation of hip replacements.</p>

<p style="text-align: center;">Spring 2017</p>	<p>Introduction of material into present project from the unit about instrumentation used, implants and roles of perioperative team.</p>
<p style="text-align: center;">August – October 2017</p>	<p>Generalization of the concepts related to project work as data collection methods e.g. implementation, methods, evaluation, examination of theoretical material. After feedback received during guidance meetings on 12th September and 2nd of October project was restructured. Although project required some big structural changes, supervisors were quiet satisfied with its contents and adherence to defined purpose and aim in the beginning of work. Profound research has been done during this time as contents required more comprehensive data and layout, some of theoretical material was missing. Important to mention the fact, that I have been already doing my advanced practices so it helped in getting more observation data and be in close cooperation with project' supervisors from receiving organization. After successful introduction of required changes Presentation of the project product took place on 13.10 during "osaston tunti" time when the topic was TEP procedures and it was a good moment to give a brief introduction to project work I have done.</p>

Appendix 3. Operating model.











Appendix 4. Choosing prosthesis.

Table 6. Choosing prosthesis.

Type and description of an implant.	Image of an implant.
<p>SUMMIT – PINNACLE Pinnacle cement-less cup 1 set contains a cup reamer ja material to maintain cup.</p> <p>Cups of PINNACLE are of three kinds including hole free, with three holes and many holes. The one containing many holes is required mainly for revision surgery.</p>	 <p>The image shows the logo for PINNACLE HIP SOLUTIONS, which consists of the word 'PINNACLE' in a large, bold, sans-serif font with a stylized 'A' that has a dot above it, and 'HIP SOLUTIONS' in a smaller font below it. Below the logo are three hip cup implants: one is a plain metal cup, one has three holes, and one has many small holes.</p>
<p>SUMMIT Cement – less stem 2 sets reamer and basic devices.</p>	 <p>The image shows a hip stem implant, which is a long, tapered metal rod with a textured surface and a curved end.</p>

Type and description of an implant.	Image of an implant.
<p>ACCOLADE – TRIDENT</p> <p>Trident cement - less cup 1 set contains cup reamers and material to maintain cup.</p>	
<p>ACCOLADE cement – less stem.</p> <p>Two sets stem reamers and basic devices.</p>	

EXETER cement stem.

Could be set up with Exeter cement cup NFB50 or Trident/Tritanium hybrid cup NFB40.

