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Comprehensive Nursing Management and Clinical Considerations in Full-Thickness Skin Grafting Procedures

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Abstract
Background: Full-thickness skin grafts (FTSGs) are an established reconstructive technique used when primary closure, secondary healing, or flap reconstruction is unsuitable. By transferring the entire epidermis and dermis, FTSGs offer superior durability, reduced contraction, and improved cosmetic outcomes in functionally and aesthetically sensitive areas.
Aim: This article aims to review the principles, indications, contraindications, technique, complications, and nursing considerations associated with full-thickness skin grafting.
Methods: A narrative clinical review was conducted synthesizing anatomical, physiological, surgical, and nursing perspectives related to FTSGs, with emphasis on graft survival mechanisms, patient selection, operative technique, and postoperative care.
Results: FTSGs demonstrated advantages over split-thickness grafts, including reduced secondary contraction, better color and texture match, improved sensory recovery, and higher durability. Successful graft take depended on adequate vascularity, meticulous surgical technique, and comprehensive postoperative nursing care. Common complications included graft failure, infection, contraction, pigmentary changes, and donor-site morbidity.
Conclusion: FTSGs remain a cornerstone reconstructive option, supported by multidisciplinary collaboration and vigilant nursing management to optimize outcomes.
Key words: Full-thickness skin graft, reconstructive surgery, nursing care, wound healing, graft complications

Introduction
Full-thickness skin grafts represent a central technique in reconstructive surgery and remain a key option when primary closure, secondary intention healing, or local and regional flap reconstruction cannot be achieved. A skin graft is defined as the transfer of skin tissue that is completely detached from its original blood supply and placed onto a recipient site where revascularization must occur for survival [1]. In contrast to split-thickness skin grafts, which include the epidermis and only part of the dermis, full-thickness skin grafts contain the entire epidermal and dermal layers. This structural completeness underpins their clinical value and explains their continued use despite technical demands and donor site limitations. The theoretical ideal skin substitute would replicate native skin in structure and function, including appendages such as hair follicles, sebaceous glands, sweat glands, sensory nerves, and pigmentation. Current grafting options do not fully meet this goal. Autologous grafts remain the standard due to immunologic compatibility, while allogenic and xenographic tissues serve as temporary coverage or adjuncts in selected cases [2]. Advances in tissue engineering have introduced acellular dermal matrices and cellular skin substitutes, which may be used alone or in combination with grafting. Despite these

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developments, full-thickness skin grafts continue to offer a reliable balance between structural integrity and functional restoration. Clinically, full-thickness skin grafts provide several advantages over split-thickness grafts. They demonstrate reduced secondary contraction, improved durability, and closer resemblance to surrounding skin in terms of thickness and pigmentation [3]. These properties make them suitable for areas where form and function are tightly linked. Common indications include reconstruction of facial subunits such as the nasal tip, nasal ala, eyelids, ears, and perioral region, as well as coverage of small defects on the hands and fingers [4]. In these locations, excessive contraction or color mismatch may compromise function or appearance, making split-thickness grafts less suitable.

Full-thickness skin grafts may also be used to cover deeper defects provided that the wound bed is capable of supporting revascularization. Successful graft take requires contact with vascularized tissue such as perichondrium, periosteum, peritenon, fascia, muscle, intact perineurium, or healthy granulation tissue [5]. Avascular surfaces such as exposed bone without periosteum or bare tendon generally preclude graft survival unless prepared appropriately. The dependence on wound bed vascularity represents a central limitation of this technique and underscores the importance of careful patient and site selection. Donor site choice is another critical determinant of outcome. The donor skin should approximate the recipient area in color, thickness, texture, and degree of sun exposure. Common donor sites include the postauricular region, supraclavicular area, groin, and inner arm. Unlike split-thickness grafts, full-thickness graft donor sites require primary closure, which restricts the amount of skin that can be harvested and introduces the risk of donor site morbidity [6]. These constraints limit the size of defects that can be reconstructed using this method. Despite their advantages, full-thickness skin grafts carry a higher risk of failure compared to split-thickness grafts, particularly in compromised hosts or poorly prepared wound beds. Factors such as infection, hematoma, seroma, smoking, vascular disease, and inadequate immobilization may impair graft survival [7]. For this reason, meticulous surgical technique and close postoperative monitoring are essential. Understanding the biological principles, technical requirements, and clinical indications of full-thickness skin grafting is essential for optimizing patient outcomes. This discussion addresses the foundational concepts that guide graft selection and application, while setting the stage for a detailed examination of indications, operative considerations, donor site selection, complications, and long-term clinical outcomes associated with full-thickness skin grafts [5][6][7].

Anatomy and Physiology

Full-thickness skin grafts are composed of the complete epidermal layer and the entire dermis, allowing for the preservation of essential cutaneous appendages, including sebaceous glands, eccrine and apocrine sweat glands, and hair follicles. The epidermis is primarily formed by stratified keratinocytes that undergo continuous differentiation, providing an effective mechanical and immunological barrier against environmental insults and microbial invasion. Beneath this layer, the dermis contains a dense cellular and extracellular matrix framework composed of fibroblasts, collagen fibers, elastin, and ground substance, along with an intricate vascular and neural network. This complex architecture plays a central role in maintaining skin strength, elasticity, and metabolic exchange, all of which are critical for graft viability and long-term integration following transplantation. In contrast to split-thickness skin grafts, which include only a portion of the dermis and lack many adnexal structures, full-thickness skin grafts preserve the full dermal matrix. This structural integrity contributes to superior mechanical durability, reduced secondary contraction, and improved sensory recovery after healing. The retention of adnexal units supports a more physiologic restoration of skin function and improves pigmentation stability and texture over time. As a result, full-thickness skin grafts are associated with enhanced cosmetic outcomes and greater resistance to trauma, particularly in anatomically and functionally sensitive regions. These advantages underscore the importance of careful donor site selection, as the harvested tissue should closely resemble the recipient site in color, thickness, elasticity, and surface characteristics to achieve optimal functional and aesthetic results. The survival of a full-thickness skin graft depends entirely on its ability to reestablish vascular connections with the recipient bed. This process occurs through a predictable sequence of physiological events that enable the initially avascular graft to regain metabolic support. Immediately following transplantation, the graft relies on passive diffusion of oxygen and nutrients from the wound bed through a process known as plasmatic imbibition. During the first one to two days, the graft absorbs plasma-rich transudate, which maintains cellular viability and prevents desiccation. This phase is essential for sustaining the graft until active vascular connections can form [8].

Following plasmatic imbibition, the process of inosculation begins. During this stage, capillary buds from the recipient bed align with and connect to preexisting vascular channels within the graft dermis. These early anastomoses facilitate the gradual restoration of blood flow and represent a critical transitional phase in graft survival. Successful inosculation depends on close contact between the graft and the recipient bed, absence of infection, and prevention of shear forces that may disrupt fragile vascular connections. By approximately the fourth to seventh postoperative day, neovascularization becomes the dominant mechanism sustaining the graft. New blood vessels proliferate and mature, leading to stable perfusion and full vascular integration of the transplanted tissue. In parallel with angiogenesis, lymphatic channels begin to reorganize within the graft, typically within the first week after transplantation. Restoration of lymphatic drainage is essential for controlling interstitial fluid balance and preventing edema, which can compromise graft adherence and oxygen diffusion. Beyond the initial vascular phase, longer-term remodeling processes occur. Between two and four weeks after grafting, progressive collagen reorganization and dermal maturation enhance tensile strength and structural stability. Sensory reinnervation begins during this period as peripheral nerve fibers gradually infiltrate the graft, with functional sensory recovery continuing for several months.[8] The capacity of the surrounding wound bed to support these processes is a determining factor in graft success. A well-vascularized recipient site can supply nutrients and oxygen from the wound periphery for a distance of up to approximately five millimeters into the graft tissue. When perfusion is inadequate, graft failure becomes more likely. In such cases, delaying graft placement to allow secondary healing and granulation tissue formation may improve vascular support. Alternatively, the use of vascularized tissue flaps can provide a more reliable blood supply and enhance graft take in compromised wounds.[8][9] An understanding of the anatomical composition and physiological requirements of full-thickness skin grafts is essential for appropriate patient selection, surgical planning, and postoperative management. The preservation of complete dermal structures offers clear functional and aesthetic advantages, but these benefits are realized only when the biological demands of graft revascularization and integration are met [8][9].

Indications

Full-thickness skin grafts are indicated for the reconstruction of relatively small soft tissue defects in which primary closure is not feasible, healing by secondary intention would result in unacceptable functional or cosmetic outcomes, and local or regional flap reconstruction is either contraindicated or unnecessary. Their use is particularly well established in anatomically delicate and aesthetically sensitive regions where tissue characteristics such as color, thickness, texture, and elasticity are critical to successful reconstruction. Common clinical indications include defects of the nasal tip, dorsum, ala, and sidewall, as well as periocular defects involving the eyelids and auricular defects of the external ear.[4] In these locations, excessive contraction associated with split-thickness skin grafts can lead to distortion of normal anatomy, functional impairment, or poor cosmetic results, making full-thickness grafts the preferred option. FTSGs are also widely used in the reconstruction of small functional units, such as the digits, where durability, resistance to trauma, and preservation of fine motor function are essential. The retention of the full dermal layer and adnexal structures allows these grafts to better tolerate mechanical stress and provides improved sensory recovery compared with thinner grafts. Additionally, FTSGs are suitable for defects overlying structures such as perichondrium, periosteum, peritenon, fascia, muscle, or mature granulation tissue, provided that adequate vascularity is present. In oncologic reconstruction, they are commonly employed following excision of cutaneous malignancies when flap options are limited or when surveillance of the surgical site is desired. Patient selection is a key component of appropriate indication. Candidates should have sufficient donor tissue available for primary closure and an overall clinical status that supports wound healing. When carefully selected and properly executed, FTSGs provide reliable coverage with superior long-term functional and aesthetic outcomes, particularly in areas where minimal contraction and close tissue match are required.[4]

Contraindications

The success of full-thickness skin grafting is fundamentally dependent on the presence of a well-vascularized recipient bed capable of supporting graft revascularization. Consequently, wounds with compromised perfusion are generally unsuitable for FTSG placement. Poorly vascularized tissues, including exposed bone without periosteum, cartilage lacking perichondrium, irradiated tissue, and chronically ischemic wounds, lack the capillary network required to sustain graft survival. In such settings, the risk of partial or complete graft failure is significantly increased, and alternative reconstructive strategies should be considered. Active infection at the recipient site represents a major contraindication, as bacterial contamination interferes with plasmatic imbibition, capillary inosculation, and neovascularization. Similarly, wounds that are heavily colonized or associated with uncontrolled bleeding create an unstable environment that prevents adequate graft adherence and revascularization. The presence of residual malignancy within the wound bed is also a contraindication, as grafting may obscure early detection of recurrence and compromise oncologic outcomes. In these cases, definitive tumor clearance must be confirmed prior to reconstruction. Patient-related factors also play a critical role in determining suitability for FTSG. Tobacco use is a well-documented risk factor for graft failure due to its deleterious effects on tissue oxygenation, microvascular perfusion, and wound healing. Smoking induces vasoconstriction and reduces oxygen delivery, thereby impairing the early phases of graft survival. Patients should therefore be strongly advised to discontinue smoking preoperatively to optimize outcomes.[10] Systemic conditions such as poorly controlled diabetes, severe peripheral vascular disease, and immunosuppression may further compromise graft viability and must be carefully evaluated. Recognition of these contraindications is essential to minimize complications and ensure successful reconstructive outcomes [10].

Equipment

The performance of a full-thickness skin graft requires a comprehensive set of equipment to support preoperative preparation, precise intraoperative technique, and effective postoperative wound management. Prior to the procedure, appropriate local anesthesia is essential, most commonly achieved using buffered lidocaine with epinephrine to provide adequate analgesia and hemostasis. Syringes and fine-gauge needles facilitate controlled anesthetic infiltration, while antiseptic solutions are necessary for thorough skin preparation. Accurate marking of both donor and recipient sites using a surgical marker ensures proper planning, and sterile templating materials are used to replicate the defect dimensions and guide graft harvest. During the operative phase, strict adherence to sterile technique is mandatory. Surgical drapes establish a controlled field, while a scalpel fitted with a fine blade allows for precise incision and graft harvest. Toothed forceps and scissors are used to handle tissue delicately and to meticulously remove subcutaneous fat from the graft, a critical step in promoting revascularization. Needle holders and suture scissors support efficient wound closure, and normal saline is used to maintain tissue hydration. Hemostasis is achieved through careful technique and, when necessary, the use of an electrosurgical device. Selection of appropriate absorbable sutures for deep closure and cutaneous sutures for skin approximation is essential for both donor and recipient sites. Postoperatively, specialized dressings play a vital role in graft stabilization and protection. Nonadherent materials prevent disruption of the graft surface, while petrolatum-impregnated gauze and bolster dressings provide uniform pressure to maintain graft contact with the wound bed. Sterile ointments and adhesive dressings further protect the site and promote healing.[4][10][11] The availability and proper use of this equipment directly influence graft take and overall surgical success.

Personnel

Successful execution of full-thickness skin grafting relies on a coordinated multidisciplinary healthcare team that contributes to patient safety, procedural efficiency, and optimal outcomes. The surgeon bears primary responsibility for patient selection, operative planning, graft harvest, and precise placement of the graft. Surgical assistants and scrub nurses play a critical supportive role by preparing instruments, maintaining sterility, and assisting with delicate graft handling, which is essential to prevent mechanical damage and desiccation. Anesthesia care is provided by anesthesiologists or nurse anesthetists, who ensure adequate analgesia and monitor physiological stability throughout the procedure. Their involvement is particularly important in patients with comorbid conditions that may influence perioperative risk. Following surgery, postoperative nursing staff are central to ongoing care, including wound assessment, dressing management, pain control, and early identification of complications such as hematoma, infection, or graft compromise. Allied health professionals further enhance recovery and functional outcomes. Physical and occupational therapists assist patients with mobilization and functional rehabilitation when grafts involve the extremities or joints. Pharmacists contribute by optimizing medication regimens, managing antibiotics and analgesics, and advising on topical wound care agents. In cases involving oncologic reconstruction, pathologists play a key role in margin assessment to ensure complete excision prior to grafting. Social workers and case managers facilitate discharge planning, coordinate follow-up care, and address psychosocial needs. This collaborative, interprofessional approach is essential for maximizing graft survival, restoring function, and achieving high standards of patient-centered care [10][11].

Preparation:

Preparation is a decisive determinant of full-thickness skin graft success and requires careful attention to both local wound conditions and the overall clinical status of the patient. The recipient site must provide an optimal biological environment to support graft adherence and revascularization. This includes ensuring that the wound bed is clean, well perfused, and free of infection, necrotic debris, hematoma, or excessive exudate. Any devitalized tissue must be removed through meticulous debridement to expose healthy, bleeding tissue capable of sustaining plasmatic imbibition and subsequent capillary ingrowth. In wounds that are not immediately suitable for grafting, staged preparation may be required. Techniques such as negative pressure wound therapy or the application of biologic dressings can promote granulation tissue formation, reduce bacterial burden, and improve local perfusion, thereby enhancing the likelihood of graft take. Equally important is the thoughtful selection of the donor site. The donor area should be well vascularized and allow for primary closure with minimal morbidity. In addition, it should closely resemble the recipient site in terms of color, thickness, texture, and the presence of skin appendages to achieve optimal functional and aesthetic integration. Common donor sites include the supraclavicular region, postauricular area, and groin, as these locations often provide favorable tissue characteristics and acceptable cosmetic outcomes. Accurate sizing of the graft is essential, and this is typically achieved by creating a precise template of the defect using a pliable sterile material, which is then transferred to the donor site and outlined with a surgical marker to guide harvest. Both donor and recipient sites must be anesthetized adequately and prepared using strict aseptic technique to minimize infection risk. At the recipient site, careful preparation includes gentle scrubbing and final debridement as needed, followed by meticulous hemostasis. Excessive bleeding can interfere with graft adherence and promote hematoma formation beneath the graft, whereas inadequate perfusion compromises graft survival, making balance essential.[12] Preoperative patient optimization further contributes to success and includes management of comorbid conditions such as diabetes or vascular disease, ensuring adequate nutritional status, and cessation of smoking or vasoconstrictive medications that impair tissue oxygenation. Appropriate anesthesia planning, clear surgical markings, and adherence to sterile technique collectively create the conditions necessary for reliable graft survival and favorable long-term outcomes [11][12].

Technique or Treatment

The application of a full-thickness skin graft represents a refined surgical intervention that demands precision, planning, and strict adherence to established reconstructive principles. The objective of this technique is to transplant a composite unit consisting of the entire epidermis and dermis onto a recipient site capable of sustaining rapid revascularization and long-term integration. Full-thickness skin grafting is favored in anatomically and cosmetically sensitive regions because it provides superior color fidelity, reduced secondary contraction, enhanced durability, and preservation of skin appendages. Achieving these outcomes depends on careful donor site selection, gentle tissue handling, secure graft fixation, and structured postoperative management, all of which directly influence graft survival and functional success. The procedure begins with identification of a donor site that closely resembles the recipient area in thickness, pigmentation, texture, and adnexal composition. Once selected, an accurate template of the recipient defect is created using a pliable sterile material. This template is transferred to the donor site and outlined precisely with a surgical marker to ensure accurate graft dimensions and minimize donor site morbidity. Sharp incision is performed along the marked borders, and the graft is elevated carefully using a skin hook while maintaining dissection just beneath the dermal layer. Preservation of the dermal architecture during elevation is essential, as excessive trauma compromises vascular integration and increases the risk of graft loss. Following harvest, the graft undergoes meticulous preparation. All subcutaneous fat is sharply excised from the undersurface of the graft to reduce diffusion distance and facilitate plasmatic imbibition and capillary ingrowth. Retained adipose tissue acts as a barrier to revascularization and is a recognized cause of partial or complete graft failure. Once the graft is prepared, attention is returned to the donor site. Adjacent skin is undermined as necessary to permit tension-free primary closure, which is then achieved in layers using absorbable sutures for the deep tissue and fine nonabsorbable sutures for the epidermis. This layered closure promotes optimal healing and reduces scar widening [13][14].

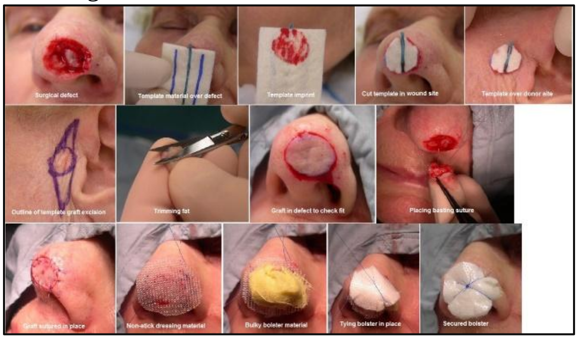

Fig. 1: Full-thickness skin graft technique.

Preparation of the recipient site is equally critical. The wound bed is cleansed thoroughly and debrided until healthy, bleeding tissue is exposed. Meticulous hemostasis is mandatory, as hematoma or seroma formation beneath the graft interferes with adherence and disrupts early vascular connections. Once the wound bed is optimized, the graft is positioned with the dermal surface in direct contact with the recipient tissue. Accurate orientation and precise edge alignment are required to ensure full defect coverage without redundancy or tension. Initial fixation is typically achieved by securing the graft corners with interrupted absorbable sutures, followed by circumferential suturing to anchor the graft margins securely. To enhance graft adherence and immobilization, a sterile moist interface or gel may be applied before placement of a bolster dressing. The bolster is constructed using petrolatum-infused gauze or similar material and is sutured firmly over the graft using nonabsorbable sutures tied to the surrounding skin. This dressing maintains constant pressure, eliminates dead space, and prevents graft shear during the critical early phases of plasmatic imbibition and inosculation. Immobilization during this period is essential, as even minimal movement can disrupt developing vascular connections. The bolster dressing is generally maintained for approximately one week, during which uninterrupted contact between the graft and wound bed must be preserved to support neovascularization and long-term graft survival.[13][14][15] Postoperative care focuses on protecting the graft, monitoring early complications, and supporting tissue healing. Once the bolster is removed, the graft is assessed for viability, color, capillary refill, and adherence. Continued wound care, infection prevention, and patient education are integral to successful outcomes. When performed with technical precision and appropriate patient selection, full-thickness skin grafting offers durable reconstruction with excellent functional and aesthetic results while minimizing the risk of graft failure and long-term complications [13][14][15].

Complications

Full-thickness skin grafts are associated with high rates of long-term success; however, several complications may arise that can compromise graft viability, functional recovery, and aesthetic outcomes. The most consequential complication is partial or complete graft failure, which typically occurs when the graft is unable to establish adequate vascular integration with the recipient site. Factors such as hematoma formation, infection, and inadequate immobilization disrupt the critical early phases of plasmatic imbibition and inosculation, thereby preventing successful neovascularization. Accumulation of blood or serous fluid beneath the graft creates a physical barrier between the graft and the wound bed, impairing nutrient diffusion and capillary ingrowth. When graft necrosis develops, the nonviable tissue may sometimes be retained as a temporary biological scaffold to support secondary epithelialization, particularly in cases where complete graft loss occurs. Compromised microcirculation is a major contributor to graft failure and is frequently observed in patients with systemic conditions such as diabetes mellitus, peripheral vascular disease, and chronic tobacco use. Nicotine-induced vasoconstriction and impaired oxygen delivery significantly reduce tissue perfusion, thereby increasing the likelihood of ischemia and necrosis. Clinical evidence demonstrates that smoking more than one pack of cigarettes per day is associated with a threefold increase in the risk of flap or graft necrosis, underscoring the importance of preoperative smoking cessation in patients undergoing reconstructive procedures. Poor perfusion may also delay graft integration, prolong wound healing, and increase susceptibility to secondary infection. Infection represents another important complication affecting both donor and recipient sites. Bacterial colonization of the wound bed or graft surface interferes with vascular ingrowth and may result in graft loss, wound dehiscence, or progression to deeper soft tissue infection. If not promptly identified and treated, infection can lead to systemic complications, prolonged hospitalization, and the need for additional surgical intervention. Strict adherence to sterile technique, meticulous wound care, and early antimicrobial therapy are essential strategies for minimizing infectious risk and preserving graft integrity [13][14].

Although full-thickness skin grafts demonstrate significantly less secondary contraction than split-thickness grafts, some degree of contraction may still occur, particularly in areas exposed to mechanical stress or tension. This phenomenon may adversely affect functional outcomes when grafts are placed over joints or mobile structures, potentially limiting range of motion or causing contour distortion. In cosmetically sensitive regions, even minimal contraction may compromise symmetry or surface appearance, necessitating revision procedures. Abnormal scar formation is another recognized complication following full-thickness skin grafting. Hypertrophic scarring and keloid development may arise, particularly in patients with a genetic predisposition or when excessive tension exists at the graft margins. These scars can negatively affect cosmetic outcomes and, in some cases, cause discomfort or pruritus. Pigmentary irregularities, including hypopigmentation or hyperpigmentation, may also occur, leading to noticeable color mismatch between the graft and surrounding skin. Additionally, sensory recovery within the grafted area may be incomplete, resulting in prolonged or permanent hypoesthesia due to limited neural regeneration. Donor site morbidity is an important consideration unique to full-thickness grafts, as primary closure is required. Wound dehiscence at the donor site may occur if closure is performed under tension or if postoperative wound care is inadequate, potentially necessitating secondary intervention. Rare but significant complications include the development of malignancy at donor sites, such as basal cell carcinoma, emphasizing the need for long-term surveillance and careful donor site selection.[16] Pediatric studies comparing full-thickness and partial-thickness grafts in hand burn reconstruction have demonstrated that while full-thickness grafts result in improved functional outcomes and reduced contracture, they are also associated with increased scar thickness, pigmentary changes, and unwanted hair growth within the grafted area.[17] Comprehensive understanding of these potential complications allows clinicians to optimize patient selection, refine surgical technique, and implement preventive strategies that enhance graft survival and patient satisfaction. Early recognition and prompt management of complications are essential to preserving the functional and aesthetic benefits that full-thickness skin grafts are designed to provide [15][16][17].

Clinical Significance

Full-thickness skin grafts represent a cornerstone reconstructive option for wounds that cannot be managed through primary closure, secondary intention healing, or local and regional flap techniques. Their clinical value lies in their ability to restore durable skin coverage with superior functional and aesthetic properties, particularly in anatomically and cosmetically sensitive regions. Despite advances in biomaterials and regenerative medicine, no synthetic or bioengineered substitute has yet replicated the full structural and functional complexity of native full-thickness skin, which includes an intact epidermis, dermis, vascular framework, adnexal structures, and pigmentation. Consequently, FTSGs remain the reference standard against which emerging technologies are measured. Current research efforts are directed toward minimizing donor site morbidity while expanding the surface area that can be effectively reconstructed, especially in patients with extensive tissue loss or limited donor availability. Innovative strategies increasingly focus on cell-based and tissue-engineered solutions. One promising approach involves the use of pluripotent stem cells to promote epithelialization, aiming to overcome the inherent limitations of autologous tissue availability [3][18][19][20]. Experimental models have demonstrated the feasibility of generating skin grafts from pluripotent stem cell–derived epidermis combined with dermal scaffolds, including constructs developed using p63 knockout embryonic dermis that retain skin appendages [18][21][22]. While these findings remain largely investigational, they highlight the potential for biologically functional graft alternatives in the future. Cultured epidermal autografts represent another significant advancement, particularly in the management of extensive wounds. These grafts allow keratinocytes harvested from a small donor site to be expanded in vitro to generate large epithelial sheets. However, the absence of adnexal structures, pigmentation, and dermal components limits their durability and cosmetic integration, restricting their optimal use to cases where conventional grafting options are insufficient. Additional cell-based therapies incorporate autologous melanocytes to improve pigmentation outcomes, though appendages remain absent [3][23]. Hybrid approaches combining skin substitutes with staged full-thickness grafting have shown encouraging results, including improved healing and reduced contracture in pediatric hand burns [24][25]. Ongoing research into xenographic materials, such as acellular fish skin grafts, further underscores the evolving landscape of reconstructive options [26]. Collectively, these developments reinforce the enduring clinical relevance of FTSGs while illustrating their role as both a definitive treatment and a platform for innovation.

Nursing, Allied Health, and Interprofessional Team Interventions

Nursing and allied health professionals play a pivotal role in ensuring the success of full-thickness skin grafting through comprehensive postoperative care and ongoing patient support. A thorough understanding of the physiological stages of graft healing is essential, as early identification of deviations from expected recovery can prevent graft loss and secondary complications. Nurses are responsible for meticulous assessment of both donor and recipient sites, including evaluation of graft color, temperature, capillary refill, and adherence, as well as monitoring for signs of infection, hematoma, or seroma formation. Accurate documentation and prompt communication of concerns to the surgical team are fundamental to timely intervention. Wound and dressing management represent a core component of nursing care. Proper maintenance of bolster dressings, protection of the graft from shear forces, and reinforcement of immobilization protocols are critical during the early postoperative period. Nurses also provide patient education regarding activity restrictions, positioning, and wound hygiene, empowering patients to participate actively in their recovery. Pain control, fluid balance monitoring, and nutritional support further contribute to optimal healing, particularly in vulnerable populations. Allied health professionals, including physical and occupational therapists, support functional recovery by designing rehabilitation programs that protect the graft while gradually restoring mobility and strength. Their interventions are especially important when grafts are placed over joints or functional units, where improper movement can compromise graft integrity or lead to contracture. Pharmacists assist in medication reconciliation and ensure adherence to antibiotic and analgesic regimens, reducing the risk of infection and improving comfort. Collectively, the interprofessional team must maintain open communication and shared responsibility for patient outcomes. Any deviation from expected healing trajectories should be escalated immediately, reinforcing a proactive, safety-oriented approach that underpins successful full-thickness skin grafting and long-term patient well-being [25][26].

Conclusion:

Full-thickness skin grafting continues to play a vital role in reconstructive surgery, particularly for small defects in anatomically and cosmetically sensitive regions where tissue quality, durability, and minimal contraction are essential. The preservation of the complete dermal structure allows for superior functional and aesthetic outcomes compared with thinner grafts, provided that strict selection criteria and technical principles are applied. Graft success relies heavily on adequate recipient-site vascularity, meticulous intraoperative technique, effective immobilization, and structured postoperative care. Nursing and allied health professionals are integral to early complication detection, wound management, patient education, and functional rehabilitation. Despite advances in tissue engineering and emerging biologic substitutes, no alternative has fully replicated the structural and functional complexity of native full-thickness skin. Consequently, FTSGs remain the reference standard against which new regenerative strategies are evaluated. Ongoing research and interprofessional collaboration are essential to minimizing donor-site morbidity, improving long-term outcomes, and enhancing patient quality of life.

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