BAB 7

KESIMPULAN DAN SARAN

7.1 Kesimpulan

Penelitian dengan judul pengaruh pemberian modifikasi plester anti tegangan (Hypafix) sebagai upaya pencegahan parut hipertrofik pada wajah dilaksanakan mulai 18 Juli 2018 hingga 31 September 2018. Sampel yang diambil adalah luka pasca pembedahan dengan jahitan pada daerah wajah dan memenuhi kriteria inklusi dan eksklusi penelitian adalah sebanyak 32 sampel. Dari penelitian ini dapat diambil kesimpulan sebagai berikut :

7.1.1 Pada gambaran kelompok usia, sampel penelitian paling banyak pada kelompok umur dewasa

7.1.2 Pada gambaran jenis kelamin sampel penelitian, jenis kelamin perempuan lebih banyak dibandingkan laki-laki

7.1.3 Pada gambaran jenis pembedahan sampel penelitian, pembedahan jenis trauma lebih banyak dibandingkan pembedahan elektif

7.1.4 Terdapat hubungan yang poitif signifikan antara pemberian modifikasi plester anti tegangan (Hypafix) dengan kualitas parut pada pasien dengan riwayat pembedahan dan luka jahitan

pada daerah wajah di Rumah Sakit Lavalette dan Rumah Sakit Persada Malang.

7.2 Saran

Bagi peneliti yang ingin atau akan meneliti mengenai pengaruh pemberian modifikasi plester anti tegangan (Hypafix) sebagai upaya pencegahan parut hipertrofik pada wajah atau penelitian yang serupa dengan topik tersebut, sebaiknya :

7.2.1 Bagi penelitian lanjut, hasil dapat dijadikan sebagai dasar penelitian lebih lanjut, disarankan untuk melakukan aplikasi plester pada luka dengan panjang yang sama, mengetahui riwayat parut abnormal pada sampel untuk mengurangi ada nya bias dan dilakuukan penambahan fakor-faktor dalam penelitian yang dapat mempengaruhi munculnya parut hipertrofik seperti warna kulit, kadar melanin agar hasil penelitian bisa lebih bervariasi dan lebih spesifik

7.2.2 Bagi klinisi, hasil penelitian ini dapat dijadikan sebagau acuan terapi pencegahan munculnya parut abnormal pada daerah wajah

DAFTAR PUSTAKA

1. Perdanakusuma, D. *Penanganan Parut Hipertrofik dan Keloid*. (Airlangga University Press, 2017).
2. Hunasgi, S. Keloid: A case report and review of pathophysiology and differences between keloid and hypertrophic scars. *J Oral Maxillofac Pathol.* 1, 116–120 (2013).
3. Gauglitz, G. & Korting, H. Hypertrophic Scarring and Keloids: Pathomechanism and current emerging treatment strategies. *Mol. Med.* 17, 113–125 (2011).
4. Andisi, Ri. D. S., Suling, P. L. & Kapantow, M. G. Profil keloid di Poliklinik Kulit dan Kelamin RSUP Prof. Dr. R. D. Kandou Manado periode Januari 2011-Desember 2015. 4, (2016).
5. Bayat, A., Mcgrouther, D. A. & Ferguson, M. W. J. Clinical review Skin scarring. *Br. Med. Journa;* 326, 88–92 (2003).
6. Guo, S. & DiPietro, L. A. Critical review in oral biology & medicine: Factors affecting wound healing. *J. Dent. Res.* 89, 219–229 (2010).

7. Bishop, A. Role of oxygen in wound healing. *J. Wound Care* 17, 399–402 (2008).

8. Rodriguez, P. G., Felix, F. N., Woodley, D. T. & Shim, E. K. The role of oxygen in wound healing: A review of the literature. *Dermatologic Surg.* 34, 1159–1169 (2008).

9. Gauglitz, G. G. Management of keloids and hypertrophic scars: Current and emerging options. *Clin. Cosmet. Investig. Dermatol.* 6, 103–114 (2013).

10. Van Leeuwen, M. C. E. *et al.* Intralesional cryotherapy for treatment of keloid scars: A prospective study. *Plast. Reconstr. Surg.* 135, 580–589 (2015).

11. Xu, J., Yang, E., Yu, N. Z. & Long, X. Radiation Therapy in Keloids Treatment : History , Strategy , Effectiveness , and Complication. *Chin. Med. J. (Engl).* 130, 1715–1721 (2017).

12. Leszczynski, R., Cap, S., Kuczynski, U. & Emk, S. Laser therapy for treating hypertrophic and keloid scars (Protocol). (2015). doi:10.1002/14651858.CD011642.www.cochranelibrary.com

13. Wuryajono, W. P. & Wihastyoko, H. Pengaruh penambahan Jahitan Intradermal Menggunakan Polipropilen parut luka

Studi. *Univ. Brawijaya Malang* (2015).

14. Son, D. & Harijan, A. Overview of surgical scar prevention and management. *J. Korean Med. Sci.* 29, 751–757 (2014).

15. Fearmonti, R., Bond, J., Erdmann, D. & Levinson, H. A review of scar scales and scar measuring devices. *J. Plast. Surg.* 10, e43 (2010).

16. Gosain, A., Dipietro, M. D. L. A. & Ph, D. Aging and Wound Healing. *World J. Surg.* 28, 321–326 (2004).

17. Li, H. *et al.* Modulation of Wound Healing and Scar Formation by MG53 Protein-mediated Cell Membrane Repair *. *J. Biol. Chem.* 290, 24592–24603 (2015).

18. Diegelmann, R. F. Wound healing: an overview of acute, fibrotic and delayed healing. *Front. Biosci.* 9, 283 (2004).

19. Li, J., Chen, J. & Kirsner, R. Pathophysiology of acute wound healing. *Clin. Dermatol.* 25, 9–18 (2007).

20. Keast, D. H. & Orsted, H. The basic principles of wound care. *Ostomy. Wound. Manage.* 44, 24–8, 30–1 (1998).

21. Willenborg, S. *et al.* Genetic Ablation of Mast Cells Redefines the Role of Mast Cells in Skin Wound Healing and. *Soc. Investig. Dermatology* 134, 2005–2015 (2014).

22. Meszaros, A. J. *et al.* Macrophage-Induced Neutrophil Apoptosis. *J. Immunol.* 165, 435–441 (2000).

23. Park, J. E. & Barbul, A. Understanding the role of immune regulation in wound healing. *Am. J. Surg.* 187, 2–7 (2004).

24. Wynn, T. A. Fibrotic Disease And The Th1/Th2 Paradigm. *Nat. Rev. Immunol.* 4, 583–294 (2004).

25. Gawronska-kozak, B., Bogacki, M., Rim, J., Monroe, W. T. & Manuel, J. A. Scarless skin repair in immunodeficient mice. *Wound Repair Regen.* 14, 265–276 (2006).

26. Havran, W. L. & Jameson, J. M. Epidermal T Cells and Wound Healing. *J. Immunol.* 184, 5423–5428 (2010).

27. Jameson, J. & Havran, W. L. Skin gd T-cell functions in homeostasis and wound healing. *Immunol. Rev.* 215, 114–122 (2007).

28. Landén, N. X., Li, D. & Ståhle, M. Transition from inflammation to proliferation: a critical step during wound healing. *Cell. Mol. Life Sci.* 73, 3861–3885 (2016).

29. Flanagan, M. The physiology of wound healing. *J. Wound Care* 9, 25–26 (2000).

30. Velnar, T., Bailey, T. & Smrkol, J. The Wound Healing Process: an Overview of the Cellular and Molecular Mechanisms. *J. Int. Med. Res.* 37, 1528–42 (2009).

31. Pakyari, M., Farrokhi, A., Maharlooei, M. K. & Ghahary, A. Critical Role of Transforming Growth Factor Beta in Different Phases of Wound Healing. *Adv. Wound Care* 2, 215–224 (2013).

32. Cristina, A. & Gonzalez, D. O. Wound healing - A literature review*. *An Bras Dermatol* 91, 614–620 (2016).

33. Li, B. & Wang, J. H. . Fibroblast and Myofibroblast in Wound Healing: Force Generation and Measurement. *J Tissue Viability* 4, 108–120 (2012).

34. Tandara, A. A. & Mustoe, T. A. Oxygen in Wound Healing — More than a Nutrient. *World J. Surg.* 28, 294–300 (2004).

35. Edwards, R. & Harding, K. G. Bacteria and wound healing Colonisation Contamination. *Curr Opin. Infect. Dis.* 17, 91–96 (2004).

36. Ep, W. Perspectives on Wound Healing. *Austin J. Surg.* 4, 1104 (2017).

37. Thomas Hess, C. Checklist for Factors Affecting Wound Healing. *Adv. Skin Wound Care* 24, 192 (2011).

38. Gomez, C. R., Nomellini, V., Faunce, D. E. & Kovacs, J. NIH Public Access. 43, 718–728 (2009).

39. Sgonc, R. Age-Related Aspects of Cutaneous Wound Healing : A Mini-Review. *Gerontology* 59, 159–164 (2013).

40. Hardman, M. J. & Ashcroft, G. S. Estrogen, not intrinsic aging, is the major regulator of delayed human wound healing in the elderly. *Genome Biol.* 9, (2008).

41. Gilliver, S. C., Ashworth, J. J. & Ashcroft, G. S. The hormonal regulation of cutaneous wound healing. *Clin. Dermatol.* 25, 56–62 (2007).

42. Collins, N. & Toiba, R. The Importance of Glycemic Control in Wound Healing. *Ostomy wound Manag.* 18–23 (2010).

43. Brem, H. & Tomic-Canic, M. Cellular and molecular basis of wound healing in diabetes. *J Clin Invest* 117, 1219–1222 (2007).

44. Hong, W. X. *et al.* The Role of Hypoxia-Inducible Factor in Wound Healing. *Adv. Wound Care* 3, 390–399 (2014).

45. Armstrong, M. Obesity as an intrinsic factor affecting wound healing. *J. Wound Care* 7, 220–221 (1998).

46. Pierpont, Y. N. *et al.* Obesity and Surgical Wound Healing : A Current Review. *ISRN Obes.* 2014, 21–25 (2014).

47. Fontana, L. *et al.* Impaired mononuclear cell immune function in extreme obesity is corrected by weight loss Impaired Mononuclear Cell Immune Function in. *Rejuvenation Res.* 10, 41–46 (2007).

48. Juckett, G. & Hartman Adams, H. Management of Keloids and Hypertrophic Scars. *Am. Fam. Physician* 80, 253–260 (2009).

49. Rabello, F., Souza, C. & Farina Jr, J. Update on hypertrophic scar treatment. *Clinics* 69, 565–573 (2014).

50. Monstrey, S. *et al.* Updated Scar Management Practical Guidelines: Non-invasive and invasive measures. *J. Plast. Reconstr. Aesthetic Surg.* 67, 1017–1025 (2014).

51. Mari, W. *et al.* Novel Insights on Understanding of Keloid Scar: Article Review. *J. Am. Coll. Clin. Wound Spec.* 7, 1–7 (2015).

52. Unahabhokha, T. *et al.* Molecular signalings in keloid disease and current therapeutic approaches from natural based compounds. *Pharm. Biol.* 53, 457–463 (2015).

53. Jfri, A., Rajeh, N. & Karkashan, E. A case of multiple spontaneous keloid scars. *Case Rep. Dermatol.* 7, 156–160 (2015).

54. Cheng, W., Yan-hua, R., Fang-gang, N. & Guo-an, Z. The content and ratio of type I and III collagen in skin differ with age and injury. *African J. Biotechnol.* 10, 2524–2529 (2011).

55. Akaa, P. *et al.* Five Year Retrospective Study on Keloid Management. *J. Adv. Med. Med. Res.* 23, 1–8 (2017).

56. Glass, D. A. Current Understanding of the Genetic Causes of Keloid Formation. *J. Investig. Dermatology Symp. Proc.* 18, S50–S53 (2017).

57. Huang, C., Murphy, G. F., Akaishi, S. & Ogawa, R. Keloids and hypertrophic scars: Update and future directions. *Plast. Reconstr. Surg.* 1, (2013).

58. Wolfram, D., Tzankov, A., Pülzl, P. & Piza-Katzer, H. Hypertrophic scars and keloids - A review of their pathophysiology, risk factors, and therapeutic management. *Dermatologic Surg.* 35, 171–181 (2009).

59. Yoshimoto, H. *et al.* Overexpression of insulin-like growth factor-1 (IGF-I) receptor and the invasiveness of cultured keloid fibroblasts. *Am. J. Pathol.* 154, 883–889 (1999).

60. Bock, O. *et al.* Aberrant expression of transforming growth factor β -1 (TGF β -1) per se does not discriminate fibrotic from non-fibrotic chronic myeloproliferative disorders. *J.*

Pathol. 205, 548–557 (2005).

61. Andrews, J. P., Marttala, J., Macarak, E., Rosenbloom, J. & Uitto, J. Keloids: The paradigm of skin fibrosis—Pathomechanisms and treatment. *Matrix Biol.* 51, 37–46 (2016).

62. George J, Y. Y. *et al.* Mast Cells Are Required in the Proliferation and Remodeling Phases of Microdeformational Wound Therapy. *Plast. Reconstr. Surg.* 128, 649–658 (2011).

63. Wulff, B. C. & Wilgus, T. A. Mast cell activity in the healing wound : more than meets the eye ? *Exp. Dermatol.* 22, 507–510 (2013).

64. Artuc, M., Steckelings, U. M. & Henz, B. M. Mast Cell±Fibroblast Interactions: Human Mast Cells as Source and Inducers of Fibroblast and Epithelial Growth Factors. *Soc. Investig. Dermatology* 391–395 (2002).

65. Kaartinen, I. Assessment of Skin Scars in Clinical Practice and Scientific Studies. (Acta Universitatis Tamperensis 1671, 2011).

66. Nguyen, T., Feldstein, S., Shumaker, P. & Krakowski, A. A review of scar assessment scales. *Semin. Cutan. Med. Surg.* 34, 28–36 (2015).

67. Chae, J. K., Kim, J. H., Kim, E. J. & Park, K. Values of a patient and observer scar assessment scale to evaluate the facial skin graft scar. *Ann. Dermatol.* 28, 615–623 (2016).

68. Vercelli, S., Ferriero, G., Sartorio, F., Stissi, V. & Franchignoni, F. How to assess postsurgical scars: A review of outcome measures. *Disabil. Rehabil.* 31, 2055–2063 (2009).

69. Ogawa, R. & Akaishi, S. Endothelial dysfunction may play a key role in keloid and hypertrophic scar pathogenesis – Keloids and hypertrophic scars may be vascular disorders. *Med. Hypotheses* 96, 51–60 (2016).

70. Mustoe, T. a *et al.* Special Topic International Clinical Recommendations on Scar Management. *Burns* 110, 560–571 (2001).

71. Atiyeh, B. S., El Khatib, A. M. & Dibo, S. A. Pressure garment therapy (PGT) of burn scars: Evidence-based efficacy. *Ann. Burns Fire Disasters* 26, 205–212 (2013).

72. Mafong, E. A. & Ashinoff, R. Treatment of hypertrophic scars and keloids: A review. *Aesthetic Surg. J.* 20, 114–121 (2000).

73. Mamalis, A. D., Nguyen, D. H. & Jagdeo, J. R. HHS Public Access. 28, 689–699 (2015).

74. Garg, G. A., Sao, P. P. & Khopkar, U. S. Effect of carbon dioxide laser ablation followed by intralesional steroids on keloids. *J Cutan Aesthet Surg* 4, 2–6 (2011).

75. Suarez, E. *et al.* Skin equivalent tensional force alters keloid fibroblast behavior and phenotype. *Wound Repair Regen.* 22, 557–568 (2014).

76. Ogawa, R. *et al.* Clinical Applications of Basic Research that Shows Reducing Skin Tension Could Prevent and Treat Abnormal Scarring: The Importance of Fascial/Subcutaneous Tensile Reduction Sutures and Flap Surgery for Keloid and Hypertrophic Scar Reconstruction. *J Nippon Med Sch* 78, 68–76 (2011).

77. Pozos, E. S. The effect of skin tension on the formation of keloid scars. (The University of Manchester, 2014).

78. Jiang, M. *et al.* Changes in tension regulates proliferation and migration of fibroblasts by remodeling expression of ECM proteins. *Exp. Ther. Med.* 12, 1542–1550 (2016).

79. Jeong, W. *et al.* Scar prevention and enhanced wound healing induced by polydeoxyribonucleotide in a rat incisional wound-healing model. *Int. J. Mol. Sci.* 18, 1–12 (2017).

80. Balin, A. K. & Pratt, L. Oxygen Modulates the Growth of Skin Fibroblasts. *Soc. Vitr. Biol.* 38, 305–310 (2016).

81. Ruthenborg, R. J., Ban, J. J., Wazir, A., Takeda, N. & Kim, J. W. Regulation of Wound Healing and Fibrosis by Hypoxia and Hypoxia-Inducible Factor-1. *Mol. Cells* 37, 637–643 (2014).