



A guide to
skin and body
changes during
pregnancy

For Midwives

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Foreword



Marilyn Eveleigh

BSc, PGCE, RN, RM, RHV, NP,
FWT, FRSH

Independent Nurse Adviser
& Nursing in Practice
Advisory Board

It is a privilege to be a midwife: to care for a mother and her child through pregnancy, birth and the early days post-delivery. Through the physical marvel of birthing and the emotional intensity of the delivery, it is not surprising that parents frequently remember the midwife who shared the joy of welcoming their baby into the world. Midwives have always been with mothers - to guide and support the adjustments needing to be made in the early days of a new life.

Yet, with an increasing birth rate in the UK, the job has never been more demanding. The government has acknowledged and supported the need to encourage more people into the profession but the turnover of midwives remains high. To remain competent, Continual Professional Development [CPD] is a requirement of all midwifery registrants – though it does increase the pressures of a busy practitioner.

Fortunately this booklet addresses the changes and challenges to skin during pregnancy that will enhance the knowledge of midwives to undertake their role. In concise sections, it provides an evidence base for the prevention and management of stretch marks and scars, with practical tips from experienced clinical specialists. It offers sensitive insight into how stretch marks and scars can impact on the self-esteem of mothers: information that midwives will find useful in supporting expectant and new mothers.

I hope this compact and pragmatic collection will be a useful aid to your professional practice and that the references will facilitate further learning. Body changes during pregnancy and the subsequent requirements for skin care need realistic expectations and appropriate advice – and midwives are best placed to provide this to every mother.

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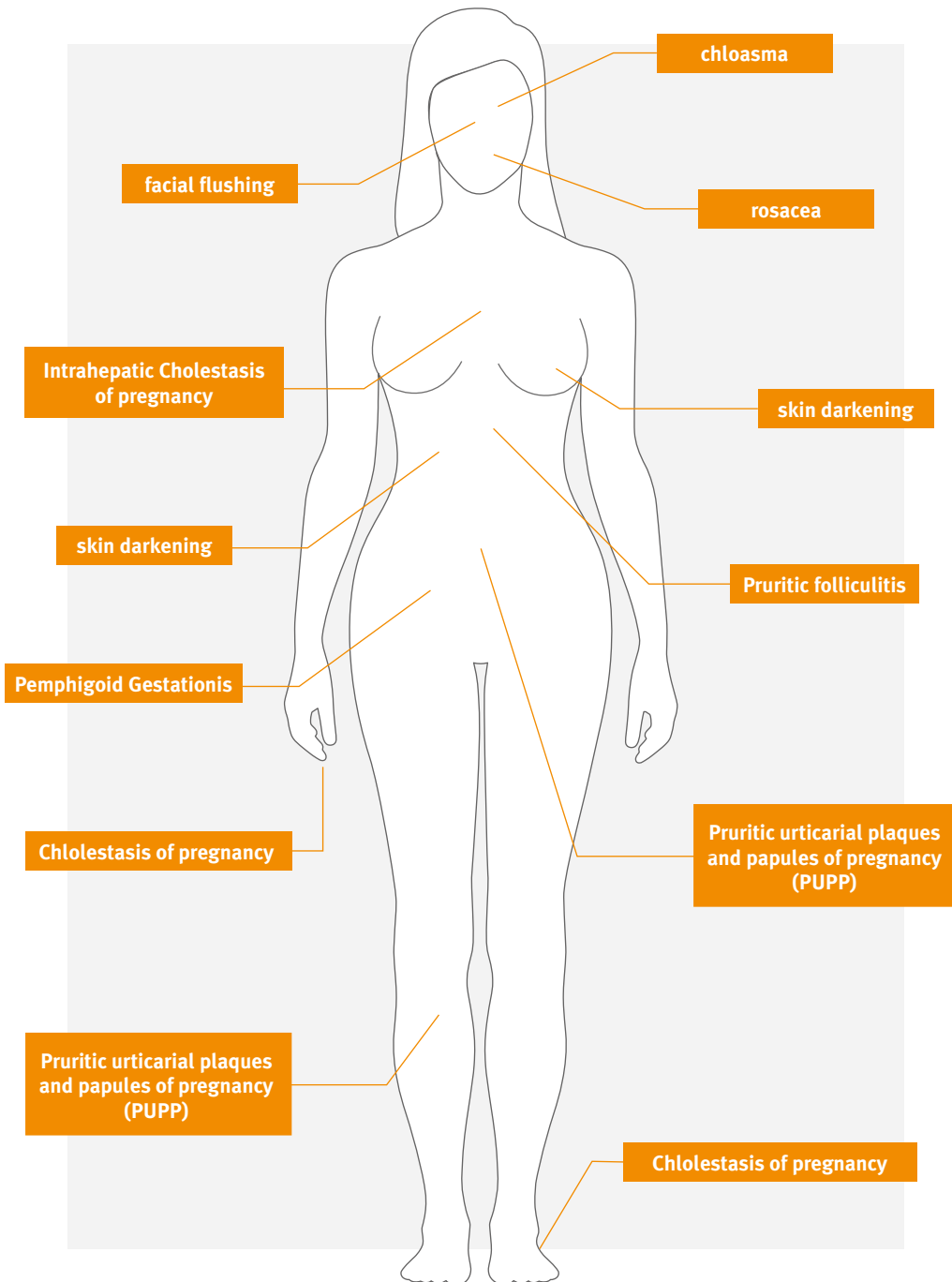
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Chapter 1

Skin changes and common dermatological diagnoses in pregnancy



Dr Justine Hextall
MBBS FRCP
Consultant Dermatologist



We encounter many natural skin changes in pregnancy. You will see the following in many patients:

Skin darkening particularly the nipples and a line from the pubis to the naval, the so-called linea nigra. Areas of facial pigmentation, which is called chloasma, again is common. The reason for these changes is the increase in melanocyte stimulating hormone (MSH) oestrogens and progesterone. This pigmentation will usually naturally fade post partum. To reduce facial pigmentation advise women to wear a factor 50 sunblock, a wide-brimmed hat and sit with their back to the sun.

Facial flushing Increased oestrogen dilates facial vessels giving that healthy pregnancy glow. Some women however find that the flushing leaves prominent capillaries and can exacerbate a skin condition: rosacea. It may be necessary to refer them to a GP to prescribe some topical antibiotic treatments. Again this should settle post partum.

Skin itching This is not uncommon, most women experience some dryness and itching, particularly in the 3rd trimester when the skin is stretched. Usually a good moisturiser is all that is needed. Sometimes your dermatologist may prescribe an anti-histamine or a topical steroid.

Striae gravidarum Stretch marks occur in around 90%¹ of pregnancies to some degree. They start at around 24 weeks. The combination of mechanical stretching and hormones are implicated in changing the underlying collagen. At first they appear red and prominent. They usually fade to silver atrophic lines. Topical creams and oils can soothe the skin and reduce the redness.

Less commonly women develop skin dermatoses specific to pregnancy. It is important that these are diagnosed and managed appropriately, so you should recommend the woman sees her GP who will refer her to a dermatologist.

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Pruritic urticarial plaques and papules of pregnancy (PUPP)

This is a distinctive pruritic (itchy) eruption of pregnancy that usually begins in the 3rd trimester, most often in a primigravidae. There is no risk to the fetus. Typically the pruritus develops on the abdomen, commonly (50%) within the striae. The lesions are urticated and sometimes vesicular. The buttocks and thighs are often affected. The face, breast and palms are rarely involved. Management: antihistamines, potent topical and rarely oral steroids. Usually relief within 48-72 hrs.

Pemphigoid Gestationis A rare autoimmune dermatosis that usually develops after 14 weeks but can develop post-partum. Itching usually develops around the umbilicus and then an urticated rash (like hives) often with plaques and sometimes tense blisters develops. Treatment is with oral prednisolone. Careful monitoring of mother and baby is vital as there is a link to premature birth and 5-10%² of newborns can have a rash for the first 6 weeks. A recurrence can be triggered with oestrogen medication and rarely menstruation.

Intrahepatic Cholestasis of pregnancy This is usually seen in the 3rd trimester. The mother complains of intense itching, often of the extensor surfaces, palms and soles, with no skin rash, except sometimes excoriations (scratches) are seen. Rarely she may be jaundiced. Bloods tests show raised bile acids and sometimes a raised bilirubin and alkaline phosphatase. Careful monitoring is essential as the fetus can be affected and sometimes early delivery is advised. Treatment is with ursodeoxycholic acid.

Pruritic folliculitis of pregnancy This is a rare dermatosis affecting around one in 3000 pregnancies (0.2% of all pregnancy dermatoses).³ A wide spread follicular eruption with papules and pustules appears on the shoulders, chest and back. It may persist until 2 months post partum. Washing with a gentle antiseptic wash e.g. Dermol 500 may help.

Chapter 2

A focus on striae gravidarum or 'stretch marks'

Aldyth Walker

Senior Midwifery Lecturer,
University of Greenwich

skin has a natural elasticity tolerance - go past it and you will get tiny fissures which are your proverbial stretch marks

Striae gravidarum or stretch marks are probably the most discussed skin adaptation that occurs during pregnancy. Nearly every woman thinks or worries about them. They develop in 50-90% of all pregnant women usually appearing in the latter half of the pregnancy.

Most commonly seen as small depressions in the skin, they are characterised by linear bands that are initially red, sometimes even purplish and gradually fade to become skin coloured or silvery, hypopigmented atrophic lines that may be thin or wide. They reflect the separation of collagen of the skin in the dermis layer, and whilst not painful, the stretching of the skin may cause a tingling or itchy sensation.

Stretch marks are often the result of rapid stretching of the skin usually associated with rapid growth or rapid weight changes. In pregnancy they usually occur on the lower abdomen and breasts but can also develop on the buttocks, hips, and thighs. Even though stretch marks are a very common occurrence in pregnancy and present no health risk, some women are concerned about developing them. Several studies have explored risk factors associated with their occurrence, it has been demonstrated that women with higher body mass indices (BMI) and women who have significantly higher weight gains have more stretch marks and that they are more common in younger women.

Race is also said to be a factor and although it was once considered to be more common in white than in black or Asian women, more recently it has been seen that black or Asian women are at greater risk. In a mixed race study, 77.8% of those with darker skin developed stretch marks in pregnancy, while 45.2% of lighter-skinned women got them.

Since olden times, women have sought remedies to prevent stretch marks during pregnancy, ancient Greeks and Romans used olive oil and frankincense oil. Modern treatments include various creams, oils, gels and lotions, however there is little in the way of medical evidence to show that these treatments are effective at either removing stretch marks once they've appeared, or helping prevent stretch marks from appearing in the first place, although many women find them beneficial.

It is important to recognise that skin has a natural elasticity tolerance - go past it and you will get tiny fissures which are your proverbial stretch marks. Everyone's threshold is different and you can't change the skin you were born with. However you can help your skin out, so moisturising, eating healthily, exercising and keeping really well hydrated and are things women can do, to give themselves a sense of control.



Chapter 3

Body changes after birth



Kathryn Gutteridge

Consultant Midwife & Clinical Lead,
Sandwell & West Birmingham Hospitals
NHS Trust

It is important that women realise that just as they took 9 months to produce a full grown baby it will take at least that long for them to regain some of their former shape

Deciding to have a baby and ultimately giving birth is one of the most life changing decisions women will make. Not only do lifestyle changes occur but so does the body with a rapidly developing uterus, placenta and fetus.

There is no doubt today that women are more body aware and conscious of how they appear to the wider world, this is no different during pregnancy and beyond. The media is fascinated with celebrity lifestyles and when a well known personality becomes a mother we are enthralled by how she has got 'back to normal'. This public interest in the female childbearing form is both helpful and a hindrance. Helpful because it raises important health subjects that may have been difficult to address in other ways but the down side is that seeing a woman carefully photographed for a magazine 2 weeks after birth will not be representative of how most women feel and look.

After the birth of a baby, the first 48 hours will show little difference in terms of shape and weight, with the majority of women feeling as if they should have lost at least 8lbs but in reality their weight stays the same. It is important that women realise that just as they took 9 months to produce a full grown baby it will take at least that long for them to regain some of their former shape.

The first 24 hours of uterine involution is important as the uterus stays firmly contracted and controls any excessive bleeding. On palpation the midwife would feel the fundus just under the umbilicus and if examined daily, there would be about a centimetre reduction in the fundal height until at around day 10, the uterus should be just palpable above the symphysis pubis. Involution takes up to 6 weeks generally to complete particularly when the woman has had several children.

The daily loss of lochia empties the uterus and ensures the risk of infection and haemorrhage is reduced. Retention of fluid in the lower limbs is usual for the first 2-3 days following birth and is generally due to additional pre-pregnant fluid volume that is

Part of a midwife's role is to reassure and instil a sense of reality when seeing new mothers

no longer required. Gradually the fluid is excreted and a more normal appearance noted. Additionally in the first few days the breasts enlarge and swell with milk production in preparation for breastfeeding; she will feel relieved when her baby feeds but uncomfortable with her new distended breasts.

All in all it is likely that the woman does not recognise herself in the mirror in those first weeks and she may feel dismayed that even though she has her baby in her arms, her body does not resemble the woman she once was. Part of a midwife's role is to reassure and instil a sense of reality when seeing new mothers. Expectations today are high in regard of how women perceive themselves, and it is more difficult when magazines and TV promotes quick fixes that are unrealistic. Preparing women for what they can expect after a baby is vital; this helps psychologically and gives more balanced expectations. Antenatal preparation with their partners enables both to hear and discuss what is real and also the myths that are common. This education approach should continue after the birth with every contact from the health professional offering reassurance and realistic advice that serves the woman well.

Timeline	Physiological change	Visual change
1st day post birth	Reduction in size of uterus, palpated around the umbilicus Lochia rubra	Abdomen feels soft and spongy Vaginal loss bloody, wearing pads
3rd-5th day post birth	Uterus well contracted at 3 fingerbreadths under umbilicus Lochia serosa Leg oedema Breasts enlargement milk production	Abdomen still soft, uterus feels firm Vaginal loss much less heavy when moving around, wearing pads Ankles look puffy and swollen Breasts tender, hot and swollen
10th day post birth	Uterus just palpable at symphysis pubis Lochia alba Breasts lactating	Abdominal tissue feels firmer Vaginal loss more settled and like a discharge, wear a liner Breasts changing constantly when feeding, wearing breast pads
28th day post birth	Uterus not palpable Breasts lactating General body tone firmer Sleep pattern changed	Abdomen firmer and more resistant Breasts more normal in size wear pads if breastfeeding Walking around with baby, doing tasks Tiredness and lack of energy
3 months post birth	Still has some post pregnancy weight to lose Breastfeeding on demand Sleep	Some routine established, finding difficult to eat regularly between caring for baby Breastfeeding exclusively, wearing pads Some nights where baby sleeps through
6 months post birth	Body shape slowly returning to previous functions Breasts still lactating Diet normal Sleep	Has more energy to walk and get out of house, meet other mothers, confidence better Baby started to wean Managing to eat at regular intervals Baby sleeping through night
12 months post birth	All body functions and physiological changes are now as pre-birth	Adapted to motherhood Back at work Enjoying family life Confidence normal

Chapter 4

Stretch mark (striae) treatments



Clemmie Hooper
Community Midwife

Maintaining a nutritious diet and keeping skin well-hydrated will ensure that it is better able to stretch in pregnancy

Natural healing and fading

Stretch marks commonly occur in weeks 28-40 of pregnancy. Although stretch marks are more visible towards the later trimesters of pregnancy, they may start forming as soon as the bump begins to grow.

The first noticeable sign may be itchiness around an area where the skin is becoming thin and pink.¹ Stretch marks may first appear as red lines or streaks, but you can reassure the mum-to-be that they often fade gradually leaving white depressed or pale wrinkled lines on the skin, from about six months following birth.²

Whilst there are products and treatments available to lessen the appearance of stretch marks, they will never fully disappear, so a treatment that helps to prevent stretch marks is preferred in many cases.

What can women do to prevent stretch marks?

Regardless of preventative methods you may follow, there are certain factors that make some more susceptible to stretch marks than others, such as family history of stretch marks, baby's birth weight and number of babies i.e. twins or triplets.

Mother's weight is a factor that can increase the risk of stretch marks. The prevalence of stretch marks is higher in women who are already obese prior to pregnancy³ and those whose weight gain is more than average throughout the pregnancy. Most women will gain between 10kg and 12.5kg (22 to 28lb) in pregnancy, although understandably weight gain will vary a great deal from woman to woman.⁴ It is, however, better during pregnancy for the woman to focus on eating the correct healthy foods than to worry about how much weight they're putting on. Maintaining a nutritious diet and keeping skin well-hydrated will ensure that it is better able to stretch in pregnancy.

Research shows that 1 in 3 feel self-conscious, embarrassed, worried or even ashamed about their stretch marks

Co-factors of stretch marks, i.e. itching, discomfort, psychological issues

Physically, stretch marks can cause discomfort in that they can be itchy or have a burning sensation for some women.⁵ Stretch marks can also have a psychological affect; research shows that 1 in 3 feel self-conscious, embarrassed, worried or even ashamed about their stretch marks and that it can even have a negative effect on what they choose to wear.⁶

Over a quarter of midwives (28%) say they frequently see women with low body confidence or self esteem as a result of their stretch marks, while a further 64% are seeing this occasionally⁷, so it's important to reassure mothers that stretch marks are common, will improve over time and to think of them positively as a memory of what their body has accomplished.

Findings show that most women will not discuss their stretch marks with friends or family members⁸ and this may be an issue that they require support and reassurance on from their midwife.

Stretch mark treatments

The best defence against stretch marks is to ensure that skin maintains maximum elasticity during pregnancy. This is achieved by keeping skin well-hydrated and supple at all times.

Food for healthy skin

Healthy eating is of course essential in pregnancy for both the unborn baby and mother's health, but it also has benefits for the skin. Collagen and elastin fibres in the skin are necessary to keep rapidly growing skin taut, and the stronger they are, the less likely they are to break resulting in stretch marks. It therefore makes sense for pregnant women to eat foods that are rich in Vitamin E and C, zinc and silica (the most abundant mineral found in the body), which help to form collagen. Vitamin C in particular is an important antioxidant that helps protect tissue from damage. Vitamins B2 (Riboflavin) and B3 (Niacin)

are also said to help promote and maintain healthy skin. In addition, drinking sufficient water (approximately 2 litres a day) is seen to be essential in order to help strengthen and renew the skin.⁹

Recommended skin foods for pregnancy:

Vitamin C – citrus fruits, bell peppers, green beans, strawberries, papaya, potatoes, broccoli, tomatoes

Zinc – red meats, poultry, beans, nuts, whole grains, fortified cereals enriched with Vitamin B12, dairy products

Vitamin B3 (Niacin) – high protein foods, fortified cereals and breads, meats, fish, eggs, peanuts

Vitamin B2 (Riboflavin) – meats, poultry, fish, dairy products, fortified cereals, eggs

Exercise

In addition to boosting energy levels, reducing mood swings, improving sleep patterns and enhancing one's overall self-image, exercise can also help prevent stretch marks forming. Exercise improves circulation, which keeps the skin elastic and more able to stretch as it grows. This improved circulation also reduces the possibility of varicose veins and swollen ankles in pregnancy. Suitable exercise during pregnancy includes swimming, yoga and pilates.

Keeping skin supple

In addition to ensuring women keep their skin supple through eating the right foods and getting enough exercise, women can also use a topically-applied product that is specifically formulated to maximise the skin's elasticity. By applying a product twice daily throughout pregnancy, skin will remain well-hydrated and better able to stretch helping to reduce the risk of developing stretch marks or lessening the number that appears.

Topical treatments such as Bio-Oil, clinically proven to improve the appearance of stretch marks¹⁰, contain Vitamin A* to help improve the skin's elasticity and Vitamin E to increase the moisture content of the epidermis. By applying a moisturising product from the around week 13 twice daily throughout pregnancy, skin will remain well-hydrated and better able to stretch with growth.

The massage action of applying a topical product increases circulation and blood flow to the stretch marks, which in turn helps to treat the area. The act of moisturising the bump is important to note as it is a time when the woman and her partner can bond with the baby. For the treatment of existing stretch marks massaging also has the psychological benefits in that the woman feels they are taking the issue into their own hands.

When stretch marks appear, there are treatments used to improve their appearance including laser treatments, laser dermabrasion, topical retinoids and exfoliation.¹¹ However these treatments are often not accessible or affordable, hence there are over-the-counter products available to help prevent or improve the appearance of stretch marks.

*Vitamin A is safe to apply topically during pregnancy

Chapter 5

Caring for women after Caesarean section (C-section)



Adèle Atkinson, Principal Lecturer,
Faculty Learning & Teaching Coordinator,
Kingston University and St. George's University of London

Women who have undergone a C-section will undoubtedly have concerns about its after effects. A study by Brown et al¹ exploring the quality of life after scarring found that key concerns included physical comfort and the look of the scar.

Managing the wound

Midwives need to be aware of the impact that infection, obesity and stress can have on wound healing and scar formation.

Two key extrinsic factors appear to help promote wound healing: the use of antibiotic measures to prevent infection and use of an appropriate dressing². NICE³ recommends antibiotic prophylaxis and its guidelines should be followed. However, since many post-operative surgical infections occur after discharge⁴, it is also important to advise the woman on how to recognise signs of infection for herself.

This may be particularly important where the woman is obese as this has been associated with a higher risk of infection, especially in abdominal surgery^{5,6}.

As with all surgical wounds, it is important to keep the site of the C-section clean. The purpose of a dressing is to do this and absorb any small amounts of oozing until the wound edges have begun to heal. This is usually within 24-48 hours⁷. The midwife will be able to advise the woman on whether her dressing is shower proof. Such dressings include OpsiteTM Post-Op, TegadermTM + Pad and Aquacel[®] surgical.

Stress has been found to delay wound healing⁸. The stress of having a C-section whether planned or unplanned is naturally significant, and the midwife will need to be aware of this when dealing with the woman. The midwife will be able to offer practical tips on dealing with stress, such as accepting offers of help around the house or with the baby. The woman may find that pain limits her mobility and that this in itself is stressful as it becomes difficult to get the baby out of the cot. Although regular pain relief should ease the pain, partners and friends or family can also help in caring for the baby.

Physical comfort

Once the wound has healed and sutures have been removed, the wound will initially appear red and may feel lumpy as the scar tissue is reorganised during the maturation phase⁹. This will reduce over time, but the process can be helped.

Silicone gel dressings over the scar have been shown to help improve the scar appearance¹⁰. These dressings can at first cause irritation when used for long periods of time, so it is important to advise the woman to increase the wear time incrementally until the dressing can be tolerated for eight hours or more¹¹.

Another strategy is the use of massage. Massage may disrupt the fibrotic tissue and increase the pliability of the scar¹². Evidence on the use of massage is inconclusive, but has been found to be anecdotally effective¹³. Massage can also help with itching and help the woman feel that she has some control over the eventual outcome of the scar. When massaging the scar, it is advisable to use a moisturising cream or oil to prevent friction from breaking down the scar.

In the longer term, the woman will want to resume normal life. NICE³ suggests that activities such as driving, carrying and lifting heavy items, can begin once she has fully recovered from the C-section. There is no guidance as to how long this could be, but a rough guide is approximately six weeks.

Psychological impact

If all proceeds smoothly, healing will be through primary closure, with the edges of the wound held together by sutures. The cosmetic outcome in this situation may be influenced by surgical technique^{2,4}, with tight sutures giving a poor cosmetic result and a more visible scar.

Massage can also help with itching and help the woman feel that she has some control over the eventual outcome of the scar

The scar may be seen as a constant reminder of the surgery, even though the event probably had a happy outcome (the baby)

C-section scars can be hidden under clothing. This does not mean that the psychological effects of the scar will be less than that of one that it is more difficult to hide. The scar may be seen as a constant reminder of the surgery¹, even though the event probably had a happy outcome (the baby). Even a planned C-section may bring back unwanted memories of the pain involved.

If the woman feels the scar is unsightly, she may be embarrassed. She may feel unhappy about undressing in front of others or reluctant for their partners to see them undressed. In the study by Brown et al¹ over half the participants felt their personal relationships had suffered as a result of the scar and many felt they had to 'put on a brave face' due to low self-confidence.

The woman may need to be reassured that the appearance of the scar will get better over time. The maturation phase of wound healing may take years⁹. Therefore it is important that the midwife goes through the process of how wounds heal with the woman. Referring to other scars to help 'normalise' this process may help, but it is important that the midwife should not trivialise the importance of the scar to the woman.

Preparation for this can begin, where possible, before surgery and should certainly start before discharge. In extreme cases referral to a psychologist may be appropriate.

References

References for Chapter 1:

- ¹ Wong R.C., Ellis C.N. Physiologic skin changes in pregnancy. *J Am Acad Dermatol.* 1984;10:929–940. [PubMed]
- ² Lin MS, Arteaga LA, Diaz LA. Herpes gestationis. *Clin Dermatol.* Nov-Dec 2001;19(6):697-702. [Medline].
Ambrose-Rudolph et al *JAAD* March 2006 Vol 54 no.3
- ³ Wong RC, Ellis CN. Continuing medical education. Physiologic skin changes in pregnancy. *Journal of the American Academy of Dermatology* 1984;10(6):929–40

References for Chapter 2:

- Atwal, G. Manku, L. Griffiths, C. and Polson, D. (2006), Striae gravidarum in primiparae. *British Journal of Dermatology*, 155: 965–969.
- Thomas R, Liston W, (2004) Clinical associations of striae gravidarum *Journal of Obstetrics & Gynaecology* Vol. 24, No. 3 , Pages 270-271.
- Osman H, Rubeiz N, Tamim H, (2007) Risk factors for the development of striae gravidarum. *Am J Obstet Gynecol* 196:62.e1-62.e5.
- Osman, H., Usta, I., Rubeiz, N., Abu-Rustum, R., Charara, I. and Nassar, A. (2008), Cocoa butter lotion for prevention of striae gravidarum: a double-blind, randomised and placebo-controlled trial. *BJOG: An International Journal of Obstetrics & Gynaecology*, 115: 1138–1142.
- Chang ALS, Agredano YZ, Kimball AB. Risk factors associated with striae gravidarum. *Journal of the American Academy of Dermatology* 2004; 51(6):881–5.
<http://www.nhs.uk/conditions/pregnancy-and-baby/pages/stretch-marks-pregnant.aspx#close>

References for Chapter 4:

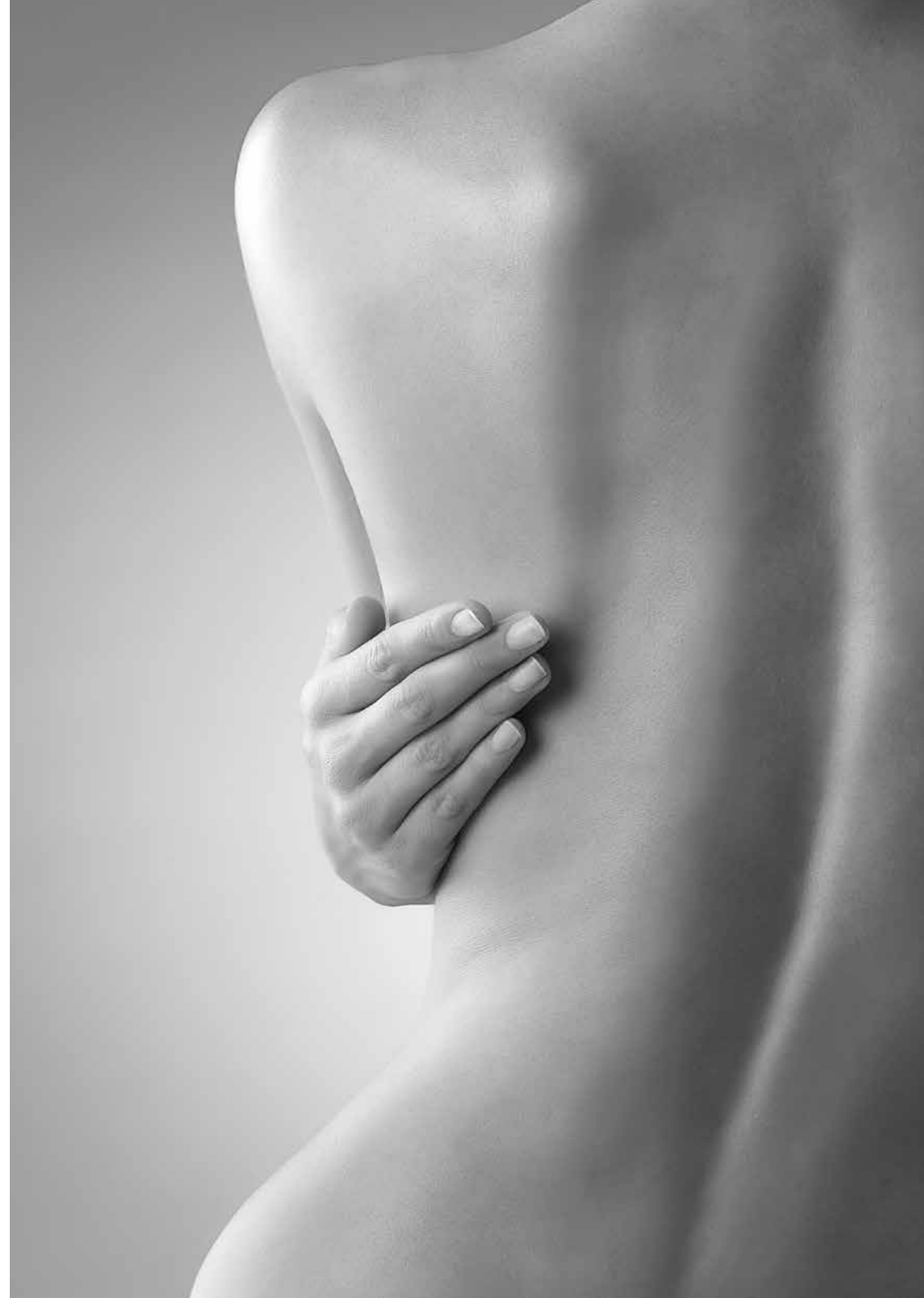
- ¹ Brennan M, Young G, Devane D. Topical preparations for preventing stretch marks in pregnancy. *Cochrane Database of Systematic Reviews* 2012, Issue 11. Art. No.: CD000066. DOI: 10.1002/14651858.CD000066.pub2
- ² Brennan M, Young G, Devane D. Topical preparations for preventing stretch marks in pregnancy. *Cochrane Database of Systematic Reviews* 2012, Issue 11. Art. No.: CD000066. DOI: 10.1002/14651858.CD000066.pub2
- ³ Atwal GSS, Manku LK, Griffiths CEM, Polson DW. Striae gravidarum in primiparae. *British Journal of Dermatology* 2006;155(5):965–9.
- ⁴ <http://www.nhs.uk/conditions/pregnancy-and-baby/pages/stretch-marks-pregnant.aspx#close>
- ⁵ Salter SA, Kimball AB. Striae gravidarum. *Clinics in Dermatology* 2006;24(2):97–100.
- ⁶ source: Skin Stories Research, survey of 3,000 conducted by OnePoll on behalf of Bio-Oil, Summer 2011
- ⁷ (source : survey of 177 midwives commissioned by Bio-Oil , April 2012)
- ⁸ One Poll online survey amongst 7,000 UK women commissioned by Bio-Oil for their Body Confidence Report (May 2012)
- ⁹ Nussbaum, Rachel, MD, Benedetto, Anthony. Cosmetic aspects of pregnancy. *Clinics in Dermatology* (2006) 24, 133-141

References

- ¹⁰ clinical trials show that after 8 weeks of using Bio-Oil, 100% saw an improvement in the appearance of their stretch marks. Summers B PhD and Lategan M Dip Cos Sci. The effect of topically-applied cosmetic oil formulation on striae distensae. *SA Fam Pract* 2009
- ¹¹ Suh D-H, Chang K-Y, Son H-C, Ryu J-H, Lee S-J, Song K-Y. Radiofrequency and 585-nm pulsed dye laser treatment of striae distensae: a report of 37 Asian patients. *Dermatologic Surgery* 2007;33(1):29-34.

References for chapter 5:

- ¹ Brown B, McKenna S, Siddhi K, McGrouther D, Bayat A. The hidden cost of scars: quality of life after skin scarring. *Journal of Plastic, Reconstructive & Aesthetic Surgery* 2008; 61:1049-1058
- ² Gould D. Caesarean section, surgical site infection and wound management. *Nursing Standard* 2007; 21: 57-66
- ³ National Institute for Clinical Excellence. Caesarean Section: Clinical Guidelines 132 2011 Online at: <http://www.nice.org.uk/nicemedia/live/13620/57163/57163.pdf> (Accessed 10.5.13)
- ⁴ Pudner R. Wound healing in the surgical patient in Pudner R (ed) *Nursing the surgical patient* (3rd ed) 2010 Edinburgh: Elsevier
- ⁵ Wilson J, Clark J. Obesity impairment in wound healing *Critical Care Nursing Quarterly* 2003; 26:119-132
- ⁶ Sarsam S, Elliot J, Lam G. Management of wound complications from caesarean delivery *Obstetrical and Gynecological Survey* 2005; 60: 462-473
- ⁷ Hampton S. Can wounds be left uncovered 48hours after surgery? *Journal of Wound Care* 2002; 11: 262
- ⁸ Broadbent E, Petrie K, Alley P, Booth R. Psychological stress impairs early wound repair following surgery *Psychosomatic Medicine* 2003; 65: 865-869
- ⁹ Flanagan M. The physiology of wound healing *Journal of Wound Care* 2000; 9: 299-300
- ¹⁰ Gold M, Foster T, Adair M, Burlison K, Lewis T. Prevention of hypertrophic scars and keloids by the prophylactic use of topical gel silicone sheets following a surgical procedure in an office setting. *Dermatol Surg*, 2001; 27: 641-644
- ¹¹ Fette A. Influence of silicone on abnormal scarring. *Plastic Surgery Nursing*, 2006; 26: 87-92
- ¹² Roques C. Massage applied to scars. *Wound Repair and Regen*, 2002; 10: 126-128
- ¹³ Shin T, Bordeaux J. The role of massage in scar management: a literature review. *Dermatol Surg*, 2011; doi: 10.1111/j.1524-4725.2011.02201.x online at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1524-4725.2011.02201.x/pdf> (accessed 12.2.2012)



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