Does eating placenta offer postpartum health benefits?

Abstract

Eating one's own placenta (placentophagy) is undergoing a small revival in Western cultures. Some view this as a way of celebrating the placenta's significance and/or promoting postpartum physical and mental health. Placenta encapsulation is becoming a popular method of preparing the placenta for consumption. This article considers the potential of placentophagy to benefit human and non-human mammals and also evaluates placental encapsulation. Several credible theories and mothers' and midwives' experiences support placentophagy, but evidence is limited, dated and inconclusive. Current and systematic research is needed. Midwives should be aware of the evidence in order to support mother's decisions.

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During an elective placement encompassing three birth-centres in Oregon, US, midwives were routinely observed to ask women whether they intended to encapsulate and consume their placenta after birthing. Questioning of the midwives and mothers revealed the belief that eating one's placenta or 'placentophagy' (Tiran, 2008: 178) yields benefits to a mother's physical and mental postnatal health (Hall, 2010; Higham, 2009; Selander, 2011a). The majority of women questioned planned placental encapsulation, and were provided with do-it-yourself instructions and information from local placental encapsulation specialists. While placentas may be prepared in different ways and eaten raw or cooked (Enning, 2007), encapsulation usually incorporates a woman's own placenta being dried, ground and placed into empty capsules for her own consumption (Selander, 2011b).

The UK and the US are currently witnessing a small revival of placentophagy, particularly using encapsulation (Selander, 2011b; Shrief 2011a). Although this is not a mainstream practice, many are aware of placentophagy. However, while placentas are revered by some, to many they are taboo, the subject of jokes or viewed as dirty waste products (BBC, 2006; Buckley, 2009; Higham, 2009). Personal experience of public attitudes while checking the placenta post-birth generates a similar response.

A search of the MIDIRS database using the terms placentophagy, placentophagia, eating placenta, ingesting placenta, placenta nutrition and placenta encapsulation resulted in 15 results, mainly consisting of opinion pieces, news articles, and dated research articles. This limited their usefulness as it is imperative to base arguments on current good quality research. Pubmed and CINAHL searches revealed nine dated journal articles, which led to a search for more up to date evidence. Using the search engine Google helped find more opinion pieces; blogs; discussions; and two websites offering information, links to research and British and American encapsulation services (Selander, 2011c; Shrief, 2011a).

This review discusses the evidence regarding placentophagy and placental-encapsulation, and discusses implications for midwifery.

Placentophagy

Placentas are recognised worldwide as having unique components. For example, the cosmetic industry has used them for their skin growth factors (O'Keefe et al, 1985; Enning, 2007). Since the 1960s, Western cultures have used them medicinally (NHS Choices, 2011). Placental and umbilical cord blood are rich in regenerative stem cells (International Society for Stem Cell Research, 2008). Medical uses include treatment for blood cancers such as leukaemia or lymphoma; bone marrow failure; blood disorders such as sickle cell anaemia or thalassaemia; immunodeficiencies and metabolic disorders. Research on their wider medical usage is ongoing (NHS Choices, 2011; NHS Blood and Transplant, 2011). However, despite acknowledgement of placental properties by medical science, robust research regarding placentophagy in humans is limited.

Literature documenting mammalian behaviour details how most mammals routinely consume their placenta or part of their placenta and/or their amniotic fluid (Lehrman, 1961; Kristal, 1980; Kristal et al, 2011). Amniotic fluid is consumed through the licking of the urogenital area by mothers immediately before and during delivery and by licking and grooming of the neonate. Excluding humans, and mammals in captivity, the only mammals who do not practice placentophagy are marine mammals and this is thought to be because their amniotic fluid is diluted and

the maternal focus is on assisting her neonate to breathe at the surface of the water. As even herbivores eat their placenta, Kristal (1980: 157) concluded that placentophagy must offer 'a fundamental biological advantage'.

Although worldwide there are many documented rituals and superstitions regarding the placenta, documented sources of human placentophagy are scarce. Instead anthropological texts document many cultures warning against it, prompting questioning of why humans do not routinely consume their placentae like other mammals (Lehrman, 1961; Kristal, 1980; Kitzinger, 2000; Enning, 2007; Knapp van Bogaert and Ogunbanjo, 2008; Buckley, 2009; Young and Benyshek, 2010; Selander, 2011d). However, historical and anthropological evidence may be scant because childbirth was accepted as a natural event and was therefore not recorded (Ober, 1979). Since the 1970s, Western countries have witnessed placentophagy occurring more regularly as it is viewed as a preventative health measure and/or a celebration of the placenta's significance (Enning, 2007; Hall, 2010; Selander, 2011d).

Most knowledge of placentophagy is drawn from animal research, particularly on rats. Animals are often used as a precursor to human research and it is widely accepted that animal research informs knowledge of human anatomy and functions (World Medical Association, 2008; Kristal et al, 2011). However, animal research can only partly be transferable to humans because sometimes, as in the case of postnatal depression, there is no adequate animal model for a postpartum human. Additionally, the fact that most mammals naturally eat their placentas whereas humans do not makes it difficult to draw conclusions from animal research (Kristal et al, 2011).

Hypotheses explaining placentophagy have included hunger, a shift in food preferences towards carnivorousness, and the need to clean the area and avoid attracting predators. Although not empirically tested theories, these do not stand up to analysis because each explanation accounts for only a subgroup of mammals and mammalian placentophagy is almost universal (Kristal et al, 2011). In 1991, it was hypothesised that placentophagy provided immunological benefits by reducing maternal antibodies being produced in response to the fetus or any retained products of conception (Kristal, 1991). However, the same author in a current paper reveals a shift of thinking, hypothesising that eating raw placenta may render a toxicological, endocrinological, or immunological threat to some women because it could contain enzymes and environmental toxins filtered by it (Kristal et al, 2011).

Kristal has led and been involved in many rat experiments examining placentophagy from 1986 to the current day (Kristal et al, 2011). Some of these experiments have been replicated with the same outcomes; therefore, lending authenticity to these results (Hicks, 1996). One of the findings was that placentophagy offers pain relieving properties in rats via ingestion of an active substance identified in placenta and amniotic fluid, termed placental opioid-enhancing factor (POEF) (Kristal et al, 2011). Intake of the amniotic fluid during labour and of the placenta and/or amniotic fluid following birth in sufficient amounts causes a series of biochemical reactions resulting in an opioid release which has an analgesic effect. This lessens labour and birth pain, while having no effect on the mother's caretaking activities of her baby. POEF necessitates ingestion to be effective, resulting in the thought that ingestion of amniotic fluid during labour and placentophagy following birth has an adaptive significance with effects on maternal bonding (Tarapacki et al, 1995; DiPirro and Kristal, 2004; Kristal et al, 2011). This body of research remains the only evidence to display enough methodological rigour to help explain placentophagy in mammals.

Several theories have neither been proven nor rejected. Many of these relate to the contents of the placenta, which if eaten, are thought to increase health and wellbeing. Indeed an autobiographical account of life in China during the great famine of the 1960s describes human placentae being highly prized due to their nutritional and restorative powers (Mosher, 1995). Isolation of beneficial substances from placenta and amniotic fluid is acknowledged to be a daunting task (Kristal et al, 2011), but it is known that they contain peptides, steroids, indoleamines and catecholamines (Kristal et al, 2011); although the impact of these is untested. The placenta is also thought to retain several other hormones, opioids and nutrients previously stored and transported within it, including proteins, iron, vitamin B6, oxytocin and corticotropin-releasing hormone (CRH) (Soyková-Pachnerová et al, 1954; Grota and Eik-Nes, 1967; Blank and Friesen 1980; Kristal, 1991; DiPirro and Kristal, 2004; Kristal et al, 2011; Nezi et al, 2011). As a result, some hypothesise that placentophagy offers health and nutritional benefits by replenishing depleted bodily stores (Enning, 2007; Higham, 2009; Selander, 2011a). However, Kristal et al (2011) argue that while this reason may be applicable to subgroups of animals, this is an anthropomorphic assertion and placentophagy for nutritional purposes is likely to be

situational rather than the ultimate cause. The Royal College of Obstetricians and Gynaecologists (Blott, cited in BBC, 2006) stated that as women in the UK are already well-nourished, placentophagy for the purpose of nutrition is unnecessary.

However, contradictory information suggests that the placenta offers a bioavailable source of iron (Berwald, 2010; Selander, 2011e), which is supported by the historical narrative previously mentioned (Mosher, 1995). Some maintain that boosting mothers' iron stores through placentophagy results in more energy, and consequently less postnatal depression (PND) (Berwald, 2010; Selander, 2011e), because low iron and fatigue are PND risk factors (Verdon et al, 2003; Beard et al, 2005; Bodnar et al, 2005; Corwin and Arbour, 2007). This is a persuasive argument but it needs substantiation. Furthermore, several methods of iron supplementation have been used in the treatment of iron deficiency anaemia including blood transfusions, iron supplementation or erythropoietin therapy, some of which may be viewed as more acceptable than others (Dodd et al, 2004).

A similar assertion is that ingesting Vitamin B6 found in the placenta prevents PND and encourages postnatal wound healing (Graff, 2008; Higham, 2009; Selander, 2011e). B6 supplementation is indeed an established treatment for PND (Marmion, 2000), and has a proven role in regulating mental processes and mood (Expert Group on Vitamins and Minerals, 2003). It is also implicated in cellular replication and antibody production (Expert Group on Vitamins and Minerals, 2003). However, evidence of the effect of Vitamin B6 directly assimilated from placentophagy is lacking.

The relationship of PND theory to the hormonal status of the mother is well-established and recognises that in non-gravid women the hypothalamus usually produces the stress-reducing corticotropin-releasing hormone (CRH), while in gravid women the placenta secretes and stores CRH at high levels during the third trimester and parturition (Nezi et al, 2011). When the placenta is expulsed there is a subsequent transient adrenal suppression, which Kalantaridou et al (2004) link to the baby blues or depression. It is hypothesised that ingestion of the hormone-rich placenta bridges this gap (Shrief, 2011b) although again evidence is absent.

> "The UK and the US are currently witnessing a small revival of placentophagy, particularly using encapsulation"

Placentophagy is thought to increase postnatal milk production and traditional Chinese medicine (TCM) prescribes placenta remedies for postpartum hypogalactia (Enning, 2007; Higham, 2009; Selander, 2011). A dated study that used rats, went some way to proving that blood levels of pituitary and ovarian hormones were modified by orally-active substances found in rat placenta, thereby increasing milk production (Blank and Friesen, 1980). The authors acknowledged that they had gained differing results from an earlier study of this kind (Grota and Eik-Nes, 1967), but hypothesised that this may be due to the rat pups being allowed uninterrupted access for suckling, unlike the previous study. However, as uninterrupted access for suckling is associated with more positive breastfeeding results in humans (Renfrew et al, 2000) this could account for some of these results. Although hormonal changes in bloods were identified the authors could only speculate why these results were obtained. Therefore, due to its age, subjects, contradictory conclusions and lack of definitive explanation of results (Rees, 2007) this study has limited applicability.

Randomised controlled trials (RCT) are usually considered the soundest method of research (Parahoo, 2006). The only RCT to address human placentophagy is a 1954 Czechoslovakian study, which examined whether human placental supplements increased milk production, (Soykova-Pachnerova et al, 1954). This aged study has not been replicated and unfortunately by today's scientific standards, there are many problems with this research. In choosing the trial participants, purposive sampling was used, which can produce bias but may also allow for a representative sample (Rees, 2007). The women chosen were anticipated as having some problems with breastfeeding. As the study wished to measure whether lactation was improved by placentophagy, purposive sampling is justifiable. However, researchers today may find it difficult identifying such a group as many factors are recognised to influence breastfeeding (Royal College of Midwives (RCM), 2002). More problematically the women chosen were multiparae who had experienced previous breastfeeding difficulties or had not previously breastfed and women with flat or unglandular breasts. Current knowledge suggests that these factors are unlikely to affect breastfeeding ability

(RCM, 2002), which undermines the studies' credibility (Rees, 2007). Participants were then randomised into two groups; however, 210 women consumed placenta while only 27 women were in the control group, of whom 6 left the study. No explanation was given in the study for such a mismatch. Although it is possible that women were randomly allocated this is doubtful due to the difference in numbers. The generalisation of results to other situations therefore becomes difficult. Furthermore it appears that although the women were justifiably blinded as to which women received which substance, the researchers were not blinded, which significantly increases the risk of bias and allows the results to be questioned (Rees, 2007). The researchers claimed to find positive results in 86% of placenta-fed women versus 33% of the beef-fed control group. Very good results were deemed to be those where breast size and tenderness increased, secretion of milk for one feed was 30g or more and the milk flowed by itself. The measurement of these results is largely subjective and current standards would require a far more rigorous approach to the collection of data and interpretation of results. There are far more problems with this research than discussed here and unfortunately the numerous methodological problems discounts this study from application to current practice as no meaningful conclusions can be drawn from it, even if the results were real (Kristal et al, 2011).

Therefore, only two hypotheses for placentophagy have been substantiated; pain relief during labour and birth through ingestion of POEF and its subsequent positive consequences on maternal care taking activities, which the research agenda has been focused on for many years. Evidence is limited in the areas regarding specific hormones and nutrients a placenta may offer, proposed benefits for nutrition, prevention of postnatal depression and increased lactation. Interestingly, these are the primary reasons cited to support placentophagy.

Placenta encapsulation

Despite limited evidence regarding human placentophagy there is historical evidence of cultures where mothers and others have consumed prepared placenta remedies, some of which continue this practice (Ober, 1979; Wu, 2005; Enning, 2007; Young and Benyshek, 2010). Traditionally, placental remedies have been familiar and valued, but like other women's knowledge about midwifery and healing, significant proportions have been forgotten or repressed, for example as a result of the fear of being accused of witchcraft in early modern Europe (Enning, 2007). However, TCM has for over 1400 years used Zi-he-che (human placenta) for hypogalactia following childbirth, and for a variety of other conditions including infertility, impotence, dizziness, tinnitus, emaciation, asthma and epilepsy (Wu, 2005; Enning, 2007). Although TCM is widely used across the world, scientific evidence of its effectiveness is, for the most part, limited (National Centre for Complementary and Alternative Medicine, 2012).


ISTOCKPHOTO

Placenta encapsulation, used in traditional Chinese medicine, is becoming more popular

Placental encapsulation may be an acceptable sanitised method of consuming the placenta for those who could not face ingestion in other ways (Selander, 2011b) although many would reject encapsulation as unclean, distasteful or cannibalism (Enning, 2007; Gibson, 2008). Concerns have been voiced regarding infection control; for example, that HIV or hepatitis could be spread through the preparation or eating of the placenta. These concerns are addressed by some placenta encapsulation specialists such as IPEN (2012) who require the use of only healthy placentas, promote careful storage and preparation, and require their specialists to possess certificates relating to food hygiene and blood borne pathogens. It is also recommended that only the mother should consume their placenta (Weekley, 2007; Selander, 2011b).

TCM uses placental encapsulation (Shrief, 2011b) but this method is newer in western societies and divides opinion. Friess (2007) states that drying the placenta destroys potential nutrients. Alternatively Shrief (2011b) maintains that although some nutrients are destroyed most benefits are retained, but acknowledges the lack of evidence relating to placentae. However, Kristal

et al (2011) were able to effectively freeze and rewarm rat placenta proving that certain treatments do not cause impairment. Furthermore, removal of water has been used for centuries as a way to preserve foods and maintain their nutritional status (Aguilera et al, 2003).

A better understanding is needed of postpartum mechanisms and specific components of placentas to investigate their effects on maternal and neonatal outcomes, which may substantiate placental encapsulation (Kristal et al, 2011). There are many outstanding questions that need to be answered:

- How do women feel about ingestion?
- What substances do placentae contain?
- What substances are absorbed via the gastric system?
- What effect may placental substances have on the mother?
- How does preparing placentae alter their properties?
- Do placentae contain harmful toxins?
- What is the lifetime and optimal dosage of active ingredients?
- What substances pass through to the neonate via breast milk?
- What effect may placental substances have upon neonatal development in the short and long term?

The timing of administration also needs consideration because non-human mammals consume their placentas immediately, whereas women may take their placenta pills over days, weeks, months or years.

Recommendations for practice

Despite the small revival of placentophagy and the growing evidence supporting medical uses of placental components, research on human placentophagy is dated, limited and inconclusive and no research on placental encapsulation exists. However, absence of evidence does not mean that it is not beneficial and credible theories support placentophagy. Women's knowledge and experiences should not be ignored (Engel et al, 2008) and numerous women and midwives give narrative accounts of the benefits, something experienced during the elective placement although this was subjective, limited and brief.

Claims supporting treatment should be accompanied by well-designed and controlled clinical trials (Moss, 1995; Kristal et al, 2011). Placentophagys' relative avoidance by humans may be for good biological reasons, which has ethical implications for human research. However, potential benefits may outweigh any negatives.

It is a midwife's duty to use evidence-based practice, but also respectfully and sensitively discuss topics that may benefit women and promote informed choice (Nursing and Midwifery Council, 2008). When measuring placentophagys' health outcomes, it may be that the woman's perception of how it makes them feel becomes more important than the medical models understanding of the evidence (Bowling, 2005; Engel et al, 2008). Certainly it seems that for some the benefits of placental encapsulation outweigh any negatives or uncertainty of its efficacy, and because women are choosing this without any existing evidence to support it, the need exists for good quality, systematic research. BJM

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Key points

- Placentophagy is undergoing a small global revival with placental encapsulation (consumption of prepared placenta in tablet form) becoming more popular
- Further research needs to be undertaken on the benefits of placentophagy for non-human and for human mammals
- Evidence on the practice is lacking, but as it becomes more popular midwives should familiarise themselves with this practice