ISP-36-9  A concept paper on human reproduction in inter-generational inter-stellar space travel—Recognising the obstetric and gynaecology issues and carcinogenesis

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[Objective] To bring to scholarly discussion on issues pertaining to human reproduction in inter-stellar space which will require inter-generational time and exposure to carcinogenesis. Space travel and planetary colonization may one day be possible. Just like breaking the sound barrier, we have to think forward. Space colonization is worthwhile only if reproduction is attainable as journeys will last for years (inter-generational) with current technology and exposure to cosmic irradiation (carcinogenesis): unless hibernation techniques, shielded fertilized embryo freezing – regrowth at destination or super quantum leap vehicles or other methods that transpose time evolve. [Methods] Many issues were identified on literature review including animal litter sizes. There are no real human studies to date. Primary issues current: zero-gravity, radiation exposure (carcinogenesis/mutations), osteoporosis, cancer formation, practicality of physical copulation—Newton’s 3rd. Law and space—suits, mother-fetal-placental circulation and embryogenesis. Secondary effects: cell division, clonal expansion, sperm travel in space with coitus, white cell dysfunction—fetal immunity, radiation effects on developing embryo/shielding, artificial gravity, lowered blood pressure—lesser erection, extra-terrestrial environment, cyto-skeletal effects, metabolic changes, length of gestation, if need for Caesarean delivery arises – operative and anaesthetic (gas behaviour) procedural rethinking, neonatal resuscitation in weightlessness or artificial gravity, blood transfusion, blood will float, liquids behaviour in space, APGAR score value in space, second stage maternal expulsive efforts – zero gravity of fetal weight versus volume of fetus, higher infection risks among others. Studies of human group male-female behavior/bonding in Antarctica reveal male/female rivalry that jeopardises the team: for prolonged periods in confined spaces with limited partner choices. Prolonged travel with radiation exposure—human carcinogenesis. Semen & menstrual blood will float. Radiation protection new materials that are not as cumbersome nor dense as lead that will affect spaceship designs as to lift-off weights: assembled in space: no-re-entry vehicle: extra gravity (many G’s) in new planetary systems among other issues. What forms of carcinogenesis—leukaemia, solid organ malignancies or other malignancies like skin cancer can occur with more frequency. [Results] At the current moment, human reproduction in inter-stellar space is not practicable and conceivable. Radiation effects are ovum & sperm toxic with embryotoxicity even if fertilization is successful—unless better shielding from cosmic rays materializes. There are many other issues including carcinogenesis and shielding of space travelers from irradiating cosmic rays. Simple vaginal delivery, neonatal resuscitation, anaesthetic gas behaviour, new LSCS methods/instruments in the weightlessness of space (unless artificial gravity created) need to be rethought. Neonatal vaccination issues: new diseases are other issues. [Conclusion] Economics, environmental issues, political domination, major natural up-heavals, minerals in space and scientific-based endeavor may be the determinants to drive research in human reproduction in inter-stellar space and the avoidance of space travel induced cosmic radiation exposure/carcinogenesis. How present day Obstetricians & Gynaecologists pre-learn/adapt would be akin to the realization that IVF/cloning/survival from cancer was not possible years ago nor conceivable. Dare we to think?

ISP-36-10  Effect of vaginal estriol treatment for total laparoscopic hysterectomy

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[Objective] Uterine shrinkage induced by gonadotropin-releasing hormone (GnRH) agonist may facilitate total laparoscopic hysterectomy (TLH), although GnRH agonist have side effects of vaginal atrophy, which may cause difficulty in uterine removal through vagina. This study aims to evaluate the effect of vaginal estriol therapy in TLH with GnRH agonist treatment. [Methods] We retrospectively reviewed 27 cases of TLH with preoperative GnRH agonist treatment, and compared surgical outcome with or without vaginal estriol use (1mg) before TLH, with informed consent to the patients. [Results] 12 cases (44%) used vaginal estriol. No significant difference exist in age (44 vs 45, p=0.11), rate of nullipara (58% vs 40%, p=0.29), uterine weight (633 vs 855, p=1), GnRH agonist treatment cycle (3 vs 3, p=0.62) between the groups. By vaginal estriol treatment, there were no improvements in uterine removal time through vagina (18.5 min vs 11 min, p=0.24), rate of perineal laceration (33% vs 33%, p=0.66), in addition, there were no difference in rate of uterus size reduction by GnRH agonist (22% vs 18%, p=0.4). [Conclusion] Vaginal estriol treatment before TLH with GnRH agonist therapy did not improve surgical outcome, although vaginal estriol can be used to atrophic vaginitis without reducing the effect of GnRH agonist therapy before TLH.