

2<sup>nd</sup> International conference on **SURGERY AND ANAESTHESIA**

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**My initial tryst with “bacteriophages” the future revolution in wound care – clinical evidence**

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Infection is the root cause of wound sepsis. Bacteremia occurs in presence of wound due to any cause. In extensive burn wounds, sepsis increases leading to septicemia and high mortality. The burn wound is sterile in the beginning but gets infected within 24 hours by gm +ive bacteria like staphylococcus and later within a week by gm –ve bacteria like pseudomonas and both are great foes of reconstructive surgeons and detrimental to burn patients as they destroy the regenerating skin. These days pathogenic bacteria's are becoming resistant to antibiotics. Biofilms contribute to chronic infection as they are made of gelatinous proteinaceous material in which bacteria are entangled and protected from being penetrated by antibiotics and so are difficult to eradicate with topical and systemic antibiotics. We had the golden period of antibiotics development during 1940 to 1970 and during 1980 and 1990, but for the last three decades no new antibiotic group has come into picture. This has further being complicated by emergence of multiple drug resistant (MDR) pathogenic bacteria. We are slowly reaching the end of road in development of newer antibiotics and this will leave us to the mercy of infection causing high mortality by multiple drug resistant bacteria especially in burn wound sepsis. So what is the answer? We started working on bacteriophages which were discovered earlier to emergence of antibiotics but not much progress took place. They are human friendly viruses killing bacteria. We are having promising and encouraging results in managing wounds but still it is in our research phase and will take long time for common real clinical practice. Bacteriophage has a great future utility and is reserved for multiple drug resistant bacterial infections. If we take proper care of burn wound by preventing superficial burn becoming deep and septic by any means then patient survival increases even in severe burns of 90 percent. So the future of preventing burn wood sepsis lies in judicious use of sustained release nanocrystalline silver, collagen and bacteriophage application. The role of skin bank in supplying allograft will be of great help in preventing sepsis and aiding second degree burns healing even in extensive severity. However SUPERBUGS will be taken care by BACTERIOPHAGE in Future. Innovation is the hall mark of plastic surgeons. My rational feeling is bacteriophages will become very effective tool in eliminating pathogenic bacteria whether resistant or nonresistant and better than antibiotics as it does not effect human eukaryotic cells and so no side effect. It is highly accurate to its target pathogens and often gets resistant at least after 3 weeks but there are at least more than 600 bacteriophages for one bacterium so there is no dearth of isolating proper bacteriophage without scarcity. It is effective in eradicating all types of resistant bacteria even in antibioma and prevents development of any septicemia. The advantages of bacteriophages over antibiotics are like quick, simple and inexpensive isolation and bacteria becoming resistant to it are about ten times less than for getting antibiotic resistance development. Phages survive and continue replicating even in harsh environment destroying the host bacterial population significantly. They have high specificity for their host like targeted guided missiles not affecting nearby other cells and without risking the natural microbiota of the human body resulting in no side-effects associated with chemical antibiotics. The safety of phage therapy has been demonstrated with minor or minimal side effects. We hope that sooner or later the role of bacteriophage will soon be established by further study in multiple drug resistant infected wound patients. It can be inferred that use of nanocrytalline silver from the beginning may decrease the necessity of bacteriophage in resistant infected burn patients treated by SSD conventional dressing for prolonged duration. My clinical evidence of tryst with utility of bacteriophage has given very encouraging results. All wounds where skin is lost and infected have healed without skin grafting plastic surgery procedures but have taken 4-5 months duration irrespective of wound size. No contractures occurred and even raw tendons got covered without restricting the tendon movements. Disadvantage is

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that the early quality of regenerated skin clinically seems not encouraging as it is pale and lighter and takes long time of about 4 months for recovery. One case of wound over patella healed without need of free or pedicled muscle or skin flap procedure. Another child of 2 years with 60 percent infected burn wound has been recovering with bacteriophage therapy without skin grafting or antibiotic or ointment use. Superficial infected burn wound as seen in 3 cases healed with in 3 weeks to 3 month's time as it prevented burn wound to become full thickness loss due to infection.

### **Biography**

SudhirSingh, IMA professor senior consultant Plastic Surgery, has also received in RG Sasaiya International Fellowship award by Association of Plastic Surgeons of India [APSI]. Past President of Indo-Nepal Association of peripheral Nerve Surgery 2013-2015. Achievements: present of Varanasi Chapter of Association of surgeons of India and Varanasi Surgical 2. Conducted many CMEs like Burn Update 2020 on 1<sup>o</sup> Feb. 2020, Peripheral nerve surgery oration at Taj on 7Feb. 2020, etc. 3. Gave talk on Clinical efficacy of Nanocrystalline SILVER And Collagen in Burn Dressing at National Academy of Burns 2019. 4. He conducted international workshop on craniofacial plating system in Varanasi in 2019 with help of SGPGI, Lucknow. 5. He is also District Chairman of Lions Clubs International District 321E Rehabilitation Service Project 2019-2020. He it also elected as executive member of Banaras Branch of IMA 2018-2019; 2019,2020; 2021-2022. Clinical evidence based Nano crystalline silver dressing rationality, efficacy and strategy in extensive burn patient's survival. IP median Journal of Clinical and Experimental Dermatology. Volume 6 Issue 3 year. 2020. Thirty-year experience of utility of island groin flap for scrotal defect single-stage reconstruction in Journal of Plastic, Aesthetic and Reconstructive Surgery JPRAS of British Association of Plastic Surgeons BAPRS official journal. (PUB MED).

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