Introduction:

The brachial plexus are a complex network of nerves between the neck & shoulders that control muscle function in the chest, shoulder, arms and hands, as well as sensibility in the upper limbs. The brachial plexus is a somatic plexus formed by the anterior rami of C5 to C8, and most of the anterior ramus of T1. It originates in the neck, passes laterally and inferiorly over the 1st rib, and enters the axilla. ***(drake et al; 2007).***

Traumatic brachial plexopathies are a diverse and complex group of injuries that result in functional upper-extremity deficits ranging from weakness to complete paralysis. ***(Belzberg et al; 2004).***

BPI is a serious and tragic cause of severe life-long disability. The most frequent victims are young men who may be fallen from motor cycles or exposed to other high-energy trauma to the upper extremity and neck. Such injuries are usually catastrophic for the affected individual causing Loss of useful function of the upper extremity. And usually patients become unemployable, and this usually creates significant socio-economic issues. ***(Terzis & Papakonstantinou, 2000).***

BPIs can affect a wide range of individuals from newborn to elderly. Obestetrical brachial plexus palsy can occure during passage through the birth canal, whereas adolescent & adult injuries may be secondary to domestic violence, vehicular trauma, athletic endeavors or systemic disease. Causes of BP lesions can be divided into trauma wither penetrating or non-penetrating, entrapment, infection, tumors, neuropathy & iatrogenic causes. ***(Kozin, 1999).***

Violent accidents are responsible for sever BPI. Progress in medicine lead to the survival of patients with these lesions and the need to repair them. In traumatic lesions of the BP, discontinuation of the nerval structure can occur at the level of the root (intra or extradural), trunk, cord, peripheral nerves & various combinations. This results is severely disabling symptoms, especially when the dominant arm is affected, in these often very young patients. Therefore, considerations of surgical approaches to improve the restoration of the functional integrity of at least part of the injured BP seem to be highly warranted. ***(Akita et al; 2006).***

Obstetrical brachial plexus paralysis refers to injury to all or a portion of the brachial plexus sustained by neonate during difficult delivery & noted at the time of delivery. Injuries often are associated with large weight at birth and shoulder dystocia. It is rarely (1% of cases) noted in neonates born via cesarean delivery. Obstetrical brachial plexus injury represent agreat problem

with great effect on the patient parents and health care authurities. Injuries associated with the upper BP are termed Erb palsies, and those associated with the lower brachial plexus are termed Klumpke palsies. ***(Al-Qattan; 2003).***

Many cases of BPI are transient, with the child recovering full function in the first week of life. A smaller percentage of children continue to have weakness leading to long-term disability from the injury. The mainstay of treatment for these children is physical and/or occupational therapy in concert with a regular home exercise program. A select few patients may benefit from surgical intervention in the early stages to improve innervation of the affected muscles. Others benefit from tendon transfers performed later to improve shoulder and, sometimes, elbow function. Numerous other nonsurgical treatments, including electrical stimulation and botulinum toxin injections, also may prove effective in the treatment of children with brachial plexus palsy. In view of the variability in presentation, treatment options, and outcome measures, a multidisciplinary approach to the care of the infant with brachial plexus palsy is recommended. ***(Al-Qattan;1999).***

The use of helmets for motorcycle drivers, efficient transport, immense advances in intensive and severe trauma care now bring to the operating room patients who used to die before reaching hospital, hence more & more severe BPIs are seen. But new hope came when microsurgical techniques, particularly autogenous nerve grafting, were introduced for peripheral nerve repair. ***(Akita et al; 2006).***

Surgery to reconstruct the injuried BP has passed through different periods of varying enthusiasm and permission, it wasnot untill the last sixties and early seventies that renewed interest in the direct surgery of the plexus emerged. Indeed, tackling such a proplem is by no means easy, and envolves along learning curve ,which continues to develop with accumuating experience.

The purpose of primary surgery or micro neural reconstruction is to correct the injury in the plexus and help the reinnervation of muscles and The techniques used depend on the severity of the lesion. Like neurolysis which is removal of the constrictive scar tissue surrounding the nerve, neuroma excision should be done When the neuroma is large and the nerve reattached either with end-to-end sutures or by fibrin glue, even with nerve grafting When the gap between the nerve ends is so large that it is not possible to have a tension free repair using end-to-end technique, The most popular harvesting sites for autogenous nonvascularised nerve grafts are the sural nerve, the lateral and medial antebrachial cutaneous nerves and the terminal sensory branch of the posterior interosseus nerve. ***(Belzberg, 2004) .***

The modern trends for repair BPI carried on the wing of microsurgery, spread rapidly over the world, closely followed by advances in anathesiology and neurobiology.Reconstructive microsurgery is the application of microvascular and micro-neural techniques for the ultimate reconstruction of a variety of defects. These techniques utilize fine instruments, microsuture, and an operating microscope. Micro-neural reconstruction is direct coaptation of the nerve or nerve grafting With microsurgical techniques that may be carried out with more accuracy and, hopefully, greater return of function. Advent of microsurgical techniques has made BP more accessible surgically, than it used to be a couple of decades ago.Although microneural co-aptation of damaged nerve fascicles at trunk, division or cord levels, have its limitations of time gap between the injury and repair, succesful application of microsurical techniques for reconstructive surgery of all types has stimulated several sergeons around the world to attempt direct repair of brachial plexuslesion itself. ***(Brown; 1987).***

Neurotization of the nerves of the BP is used generally in those cases where there is an avulsion of the nerve root from the spinal cord. The nerves that can be used as a donor nerve include the hypoglossal nerve, spinal accessory nerve, phrenic nerve, intercostal nerve, long thoracic nerve and ipsilateral C7 nerve. In addition, intraplexual neurotizationcan be used. The parts of the roots still attached to the spinal cord can be used as donors for avulsed nerves. ***(Kandenwein et al; 2005)*** .

One of the most famous examples of obstetrical brachial plexus palsy was that of Kaiser Wilhelm II, grandson of Queen Victoria, whose breech presentation was complicated by nuchal arms, and whose left arm was used to turn the body. ***(kay; 1998)***.