Transatlantic Odonto-Occipital listhesis: The so-called basilar invagination

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Man has a swollen head and a shrunken, atavistic tail. Yet, in Nature’s eye the two are on par. It is fascinating to realize that the well-recognized lumbosacral listhesis has a cranial counterpart in transatlantic Odonto-Occipital Listhesis or TOOL in short. Nature’s penchant for embryologically treating the hind-area (proctodeum) on par with the mind-area (stomodeum) gets reflected even in the work-a-day variations (‘anomalies’) of the craniocervical axis. No wonder, the sacralization of the lumbar vertebra has its cranial image in occipitalization of the atlas. TOOL as an acronym and its extended meaning have the merit of being anatomically precise and evocative. Moreover its ‘T’ indicates the dentability of the neural axis from the telescoping tooth called the odontoid process.

As the juxtaposed radiograms show [Figures 1 and 2], the listhesis (slipping) at the cranial end, nameable as TOOL, lends itself to be visualized as the listhesis at the other end, generally known as spondylolisthesis, - obviously an imprecise term, for therein the players’ names are missing. The preferable term would be lumbosacral listhesis for it incorporates the participant bones.

The fact that one out of every 20 human-spines exhibits lumbosacral listhesis as a herd feature, puts this ‘anomaly’ as an integral normal variation, not to be looked down upon as an aberration or error. A so-called ‘anomaly’ is Nature’s way of conveying to you the unfathomable complexity that goes behind fashioning of what poses as normal. It is good to revere Nature by the acronym INNTOE, *In Nature, No Terror of Error.*

The two terms normal and abnormal - the much-used, great favorites of medicos and their texts - have been denied definition in medical lexicons. *The Oxford Companion of Medicine,* merrily skips the issue in her 2-volume tome. The resolution is circumlocutional- that which is not normal is abnormal and vice versa.

Robert Ardrey declared that normality is a range and not an average and that it applies always to a herd and never to any individual and that the curve of normal distribution stretching to infinity on either side gets labeled abnormal by the ignorant. We can safely summarize that...
both TOOL and lumbosacrolisthesis are parts of normal human variation and should not be seen as either abnormal or much less, pathological. Both are compatible with symptom-free living.

The atlanto-occipital joint, in its trustable stability and amazing mobility, is comparable to the hip joint or the shoulder joint. The articulating surfaces are very large condyles, ball-n-socket like, an arrangement that ensures the foregoing. The axis in order to provide the freedom of saying ‘NO’ a little too freely, had had to sacrifice its body to form the odontoid pivot. Ergo, the atlantoaxial symphony must depend on the nature of apposition of the facetal process, which, by the law of normal distribution must get curved enough to cross the threshold of vertical stability and hence permit some telescoping to allow the odontoid to go upward, to allow you the diagnosis of TOOL. The fact that many a head with a clear TOOL inside can carry on without a bother testifies to the essential normality of TOOL. Like its caudal counterpart, TOOL is an intercentral slide - the odontoidal centrum of the axis slipping past the centrum of the occiput.

Evolutionists and embryologists now view the neck-n-head as but a limb, an assumption readily translatable into action in adult life when Peter Pele kicks the ball into the net using his head. The atlanto-occipital joint becomes a limb-joint, on par with the shoulder and the hip and capable of enjoying parallel freedoms of mobility with assured stability. Towards this end, Nature, obeying the principle that functional necessity is the mother of structural adaptation, has transformed the apposing facets into large articular surfaces almost mimicking a ball-n-socket joint.

The TOOL morale is simple. Accept it as a part of broad range of normality. And take measures to ease, if there is dis-ease, by undoing the telescoping and fixing it for good by appropriate implant or surgery. When the odontoid is digging into the cord, muscular spasm shortens the neck to minimize the stretch of the neural axis. You take away the odontoidal dig and the Nature obliges by restoring the length of the neck by relaxing the massive muscles. INNTOE.