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**A COMPARATIVE RESEARCH TO ASSESS ADVERSE OUTCOMES (MOUTH DRYNESS & CONSTIPATION) AMONG URINARY INCONTINENCE PATIENTS**

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**Abstract:**

**Objective:** We aimed to compare Tolterodine and Solifenacin in Urinary Incontinence patients and we also assessed all the associated side effects.

**Material and Methods:** We carried out a comparative research at Obstetrics and Gynecology Department of Allied Hospital, Faisalabad from September 2016 to March 2017 on a total of 830 Urinary Incontinence patients. We carried out an assessment of every patient for the presence of possible side effect between Tolterodine and Solifenacin.

**Results:** Women diagnosed with Urinary Incontinence were selected with a mean age of ( $57.34 \pm 11.54$ ) years. Research sample had a subdivision of Group – I and II. Group – I had all the patients who had Solifenacin Succinate (5mg) treatment; whereas, Tolterodine (4mg) treated cases were in Group – II. A total of 123 cases had Mouth Dryness (29.64%) were included in Group – I and 101 cases (24.34%) were included in Group – II ( $P = 0.085$ ). Whereas, 41 cases of constipation (9.88%) were included in Group – I and 21 cases of constipation (5.96%) were included in Group – II ( $P = 0.000$ ).

**Conclusion:** Five milligrams of Solifenacin succinate were caused higher constipation occurrence than four milligrams of Tolterodine; whereas, dry mouth incidence was not significant but reported higher in the patients. Outcomes clearly reflect variation in the side effects between Solifenacin succinate and Tolterodine as observed in urinary incontinence patients.

**Keywords:** Solifenacin, Anti Muscarinic, Overactive Bladder, Tolterodine, Constipation and Dry Mouth.

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## INTRODUCTION:

Overactive bladder is a syndrome which is a combination of frequent occurrence and urgency with/without nocturia and urinary incontinence [1]. Many patients do suffer from this syndrome all over the world especially in the USA. Developed countries have a prevalence rate of this syndrome as (27.6%); whereas, in the underdeveloped countries the prevalence is about (28.7%) in the range of (5.2 – 72.8) [2, 3].

Sindh is prominent in Pakistan about the urinary incontinence prevalence as about (11.56%) population is suffering from the incidence; whereas, in this proportion about Overactive Bladder is about (2.8%) [4]. Studies have varying reports of urinary incontinence burden which is often associated with the racial distribution. Numerous authors, in their cross-sectional research studies report, decreased the incidence of incontinence in Asian and Black population than the white [5].

The parasympathetic nervous system directly controls the contraction of the Bladder so its first line of treatment is anticholinergic agents used as the therapy for the overactive bladder. The working of these agents is on the basis of a non-selective muscarinic inhibition (M) receptors throughout the body's smooth muscles. Smooth muscles of the Bladder primarily carry M-3 receptors [6]. These M-3 receptors also help in the mediation of production process of saliva, iris sphincter function and gastrointestinal smooth muscles; therefore, it also carried few possible side effects such as constipation, dry mouth and meiosis [7]. Darifenacin and Solifenacin are novel agents for the overactive bladder and also possess increased M-3 receptor's affinity with reduced chances of side effects and better efficacy than the anticholinergic agents. According to Chapel et al. the STAR trial Tolterodine with Solifenacin efficacy in the cases of overactive bladder possesses mild to moderate side effects in both groups [8, 9].

Chang also conducted a research in order to compare the efficacy of Tolterodine and Solifenacin; he also presented that there is an equal efficacy which can reduce the micturition respectively (- 2.44 ± 4.56) against (-2.56 ± 3.31) with a significant (p = 0.58). Moreover, no major variations are observable in the overall life quality. Constipation and dry mouth were evident in the patients with their respective proportion of (Constipation; 12.8% versus 2.8%) P-Value (0.20) and (Dry Mouth; 18% versus 8.3%) P-Value (0.31) without any significant variation [10]. Barsa also reports same outcomes about the side

effects and considers Dry Mouth as a most prominent side effect in the patients of Solifenacin treated group (38%); whereas, a decreased proportion presented in Tolterodine treated group (24%) P-value (< 0.05). In another research Solifenacin group had 17.5% cases of dry mouth and 14.8% in the Tolterodine group (P-value > 0.05) [11]. The same author reported constipation in Solifenacin and Tolterodine groups with respective proportions of 3.2% and 1.3% with non-significant P-value of (> 0.05). Another author reported seven percent cases of constipation in his research outcomes when treated with Tolterodine alone [12].

We aimed to compare Tolterodine and Solifenacin in Urinary Incontinence patients and we also assessed all the associated side effects. Basic health facilities are at scarce in Pakistan. They are out of the grasp of common people of the country and problems such as urinary incontinence are of no importance or often overlooked in this perspective. Non-compliance of drugs is also because of side effects. Therefore, a research is mandatory in this scenario to select a medical treatment (drug) which possesses reduced side effects and brings ease in the social, marital and religious life of a woman who suffers because of the overactive bladder and urinary incontinence. In addition to that, it should also reduce the burden on the pocket of the suffering families.

## MATERIAL & METHODS:

We carried out a comparative research at Obstetrics and Gynecology Department of Allied Hospital, Faisalabad from September 2016 to March 2017 on a total of 830 Urinary Incontinence patients. We carried out an assessment of every patient for the presence of any possible side effect between Tolterodine and Solifenacin.

Dry Mouth is an abnormal saliva reduction because of the use of drugs during the treatment process; whereas, constipation is reduced (< three times) bowel movement.

We enrolled the patients who complained about nocturia, urinary incontinence and voids complaints (4 – 7 voids / day). We did not include any patient with UTI (Urinary Tract Infection), fistula, uterovaginal prolapse, pregnancy and diabetes (BSF above 126 mg/dl) & (BSR above 200 mg/dl). Through lottery methods, we randomly divided the total patients in Group – I and II. Group – I had all the patients who had Solifenacin Succinate (5mg) treatment; whereas, Tolterodine (4mg) treated cases were in Group – II. Three months observation time helped in the documentation of possible side effects

such as dry mouth and constipation after the treatment process.

We analyzed research outcomes on SPSS (P-value < 0.05).

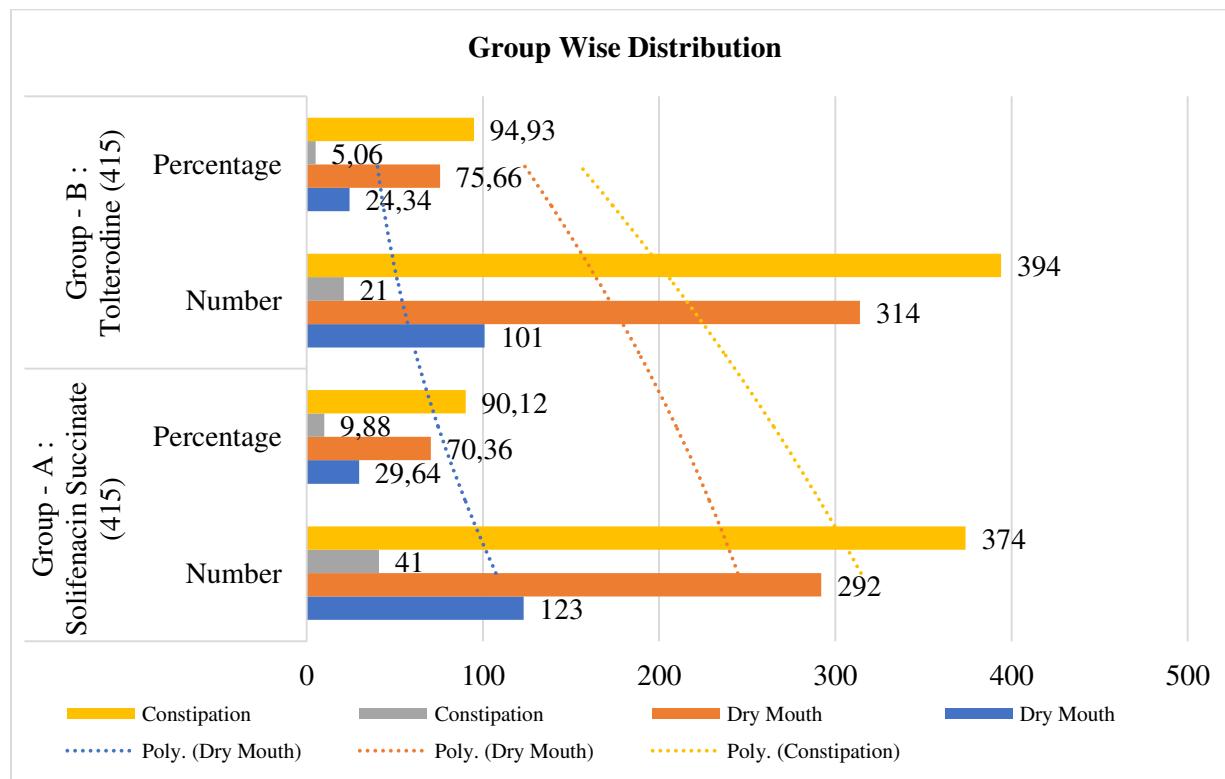
### RESULTS:

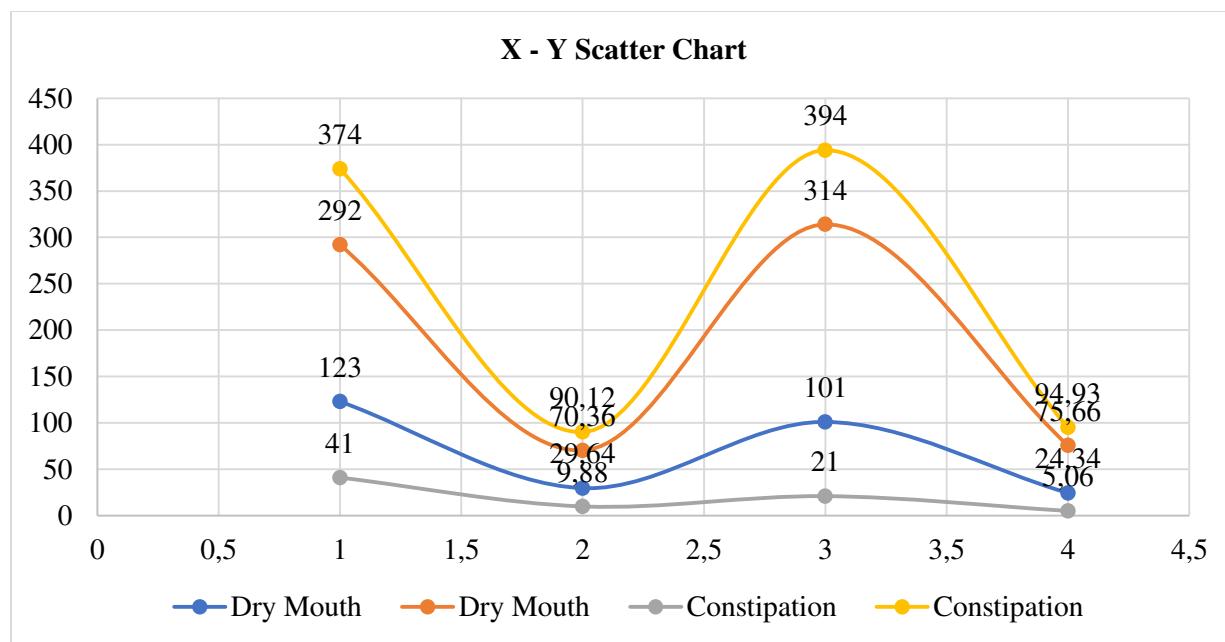
Women diagnosed with Urinary Incontinence were selected with a mean age of  $(57.34 \pm 11.54)$  years. Research sample had a subdivision of Group – I and II. Group – I had all the patients who had Solifenacin

Succinate (5mg) treatment; whereas, Tolterodine (4mg) treated cases were in Group – II. A total of 123 cases had Mouth Dryness (29.64%) were included in Group – I and 101 cases (24.34%) were included in Group – II ( $P = 0.085$ ). Whereas, 41 cases of constipation (9.88%) were included in Group – I and 21 cases of constipation (5.06%) were included in Group – II ( $P = 0.008$ ). Detailed outcomes analysis is as under:

**Table:** Group Wise Dry Mouth and Constipation Distribution

Groups		Group - A: Solifenacin Succinate (415)		Group - B: Tolterodine (415)		P-Value
		Number	Percentage	Number	Percentage	
Dry Mouth	Yes	123	29.64	101	24.34	0.085
	No	292	70.36	314	75.66	
Constipation	Yes	41	9.88	21	5.06	0.008
	No	374	90.12	394	94.93	





## DISCUSSION:

Overactive bladder is a syndrome which is a combination of frequent occurrence and urgency with/without nocturia and urinary incontinence [1]. Many patients do suffer from this syndrome all over the world especially in the USA. Developed countries have a prevalence rate of this syndrome as (27.6%); whereas, in the underdeveloped countries the prevalence is about (28.7%) in the range of (5.2 – 72.8) [2, 3]. There are reports of affected quality of life in women because of urinary incontinence. A common occurrence is observable in the perimenopause age and it gets worse with the older age factor [13].

Overactive bladder is treatable with a first line medical therapy of Anti-muscarinic. It is, therefore, there is an increase in the search for a suitable anti-muscarinic that is capable enough to reduce the pain and relives the patients, having fewer side effects and better efficacy [14]. With an increase in the anti-muscarinic quantity and number of double-blind randomized controlled is also at an increase in order to assess the tolerability and efficacy of such agents instead of anti-muscarinic with better efficacy and reduce side effects [15]. With the advancements in the Solifenacin Succinate back in 2005, numerous trials actively participated to verify the tolerability and efficacy with Tolterodine [16].

There may be a difference in the therapeutic profile due to the fact that anti-muscarinic has a different receptor interaction profile five muscarinic receptor

subtypes which forward the overactive bladder treatment options [17, 18]. Primary variation in various drugs tolerability and efficacy is because of the difference in the absorption of the tissues especially in smooth bladder muscle and peripheral tissue.

We reported dryness of mouth in Solifenacin and Tolterodine treated groups respectively as (29.64%) and (24.34%) with a significant P-value as (0.085); whereas, Chapple reported in his STAR trial respectively (30%) and (24%), which is comparable to our research outcomes [8]. Constipation was also another side effect reported as (6.4%) and (2.5%) respectively in Solifenacin and Tolterodine groups; whereas, in this particular research the constipation frequency was about (9.88%) and (5.96%) respectively in Solifenacin and Tolterodine treated patients ( $P = 0.000$ ). These outcomes are in accordance with the outcomes of Chapple [19]. Solifenacin groups presented higher occurrence of mouth dryness than Tolterodine group with respective proportions of (29.64% versus 24.35%). Their proportions are high than the outcomes reported by Chapple in his research.

Fred e Govier investigated the safety and efficacy of ten milligrams of Solifenacin Succinate 10 in the patients of overactive bladder once in a day orally taken anti-muscarinic agent and presented the outcomes of mouth dryness and constipation with respective proportions of 19% and 38% [20]. According to Michael B. Chancellor constipation and

mouth, dryness was respectively 11.6% and 17.5% [21].

Constipation and mouth dryness is different in various research outcomes in terms of the intake of both the drugs [22, 23]. However, our reported adverse effects such as constipation and mouth dryness were higher in the Solifenacin treated cases than Tolterodine group.

### CONCLUSION:

Five milligrams of Solifenacin succinate were caused higher constipation occurrence than four milligrams of Tolterodine; whereas, dry mouth incidence was not significant but reported higher in the patients. Outcomes clearly reflect variation in the side effects between Solifenacin succinate and Tolterodine as observed in urinary incontinence patients.

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